STEREO DOUBLE CASSETTE DECK

KX-65CW

SERVICE MANUAL

KENWOOD

TRIO-KENWOOD CORPORATION

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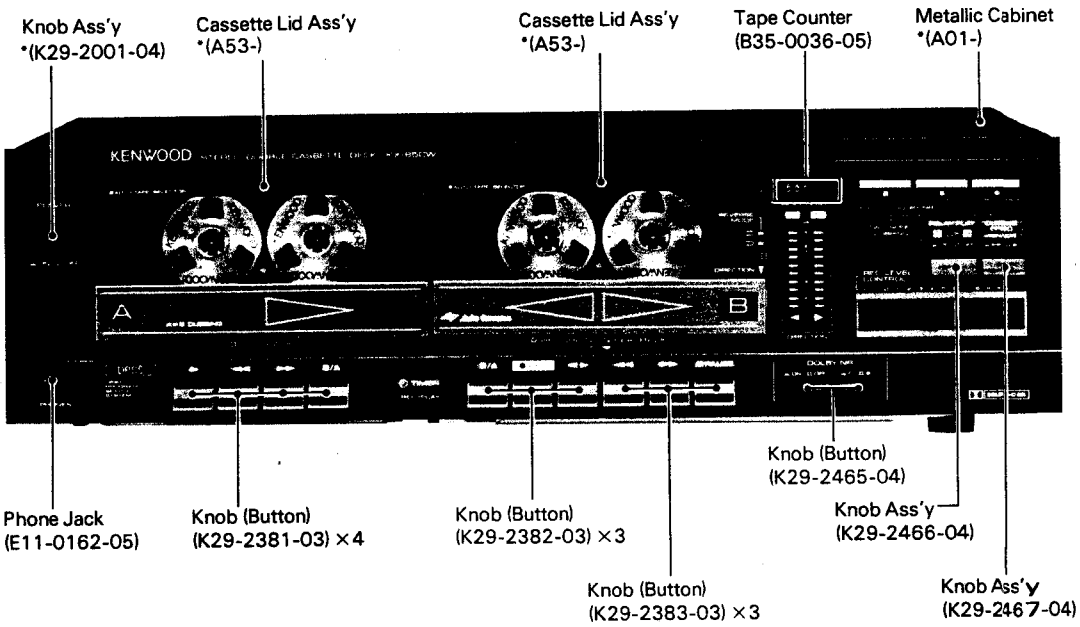
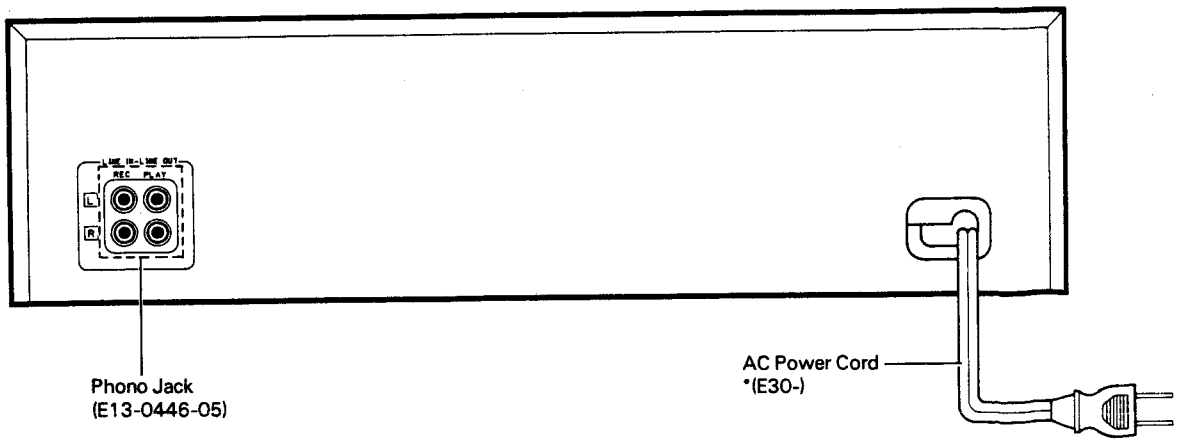
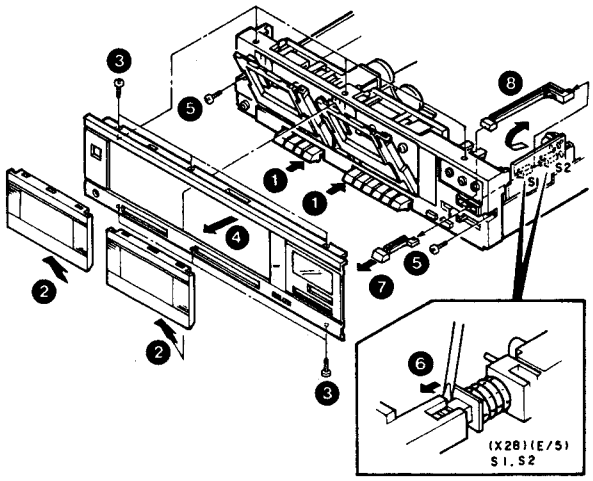




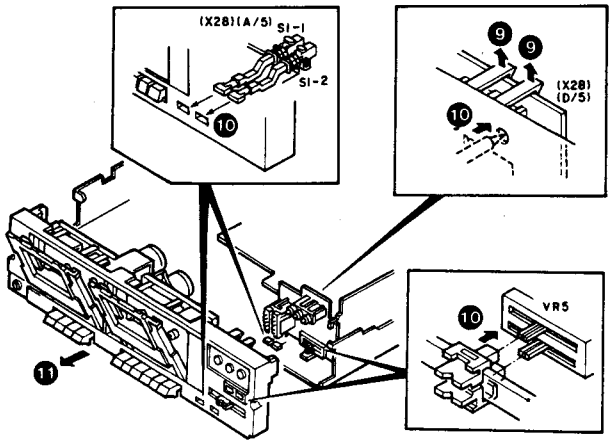
* Refer Part List on page 26.
Photo is black version.

DISASSEMBLY FOR REPAIR

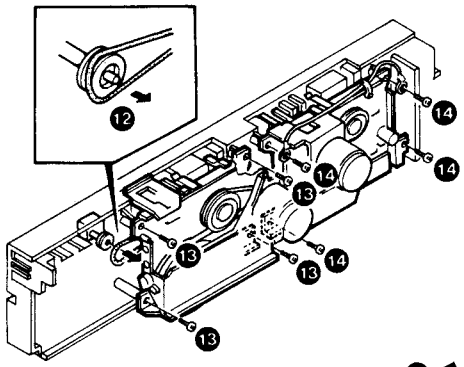
1. Press the A and B mechanism EJECT buttons ❶, and detach the cassette lids in the direction of the arrow ❷.
2. Remove the six screws ❸ from the front panel, and detach the front panel in direction ❹.
3. Remove the two screws ❺ from the sub panels.
4. Push the knobs attached to (X28) (E/5) S1 and S2 in direction ❻ by using a screwdriver, and remove the S1 knob in direction ❼ in front of the sub panel. Remove the knob attached to S2 in direction ❽.



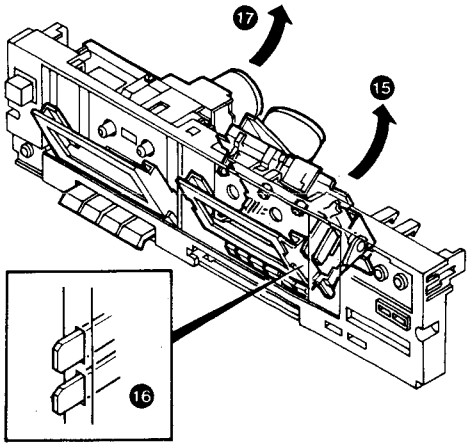
5. Remove the hook ❾ attached to the sub panel. Remove the knob attached to (X28) (D/5) VR5.
   NOTE: Attachment of the sub panel is not possible if the knob and VR5 are not matched. In the same way, when attaching knob ❿, the sub panel cannot be attached if the knob and the VR hook are not matched.
6. Remove the sub panels in direction ⓫.



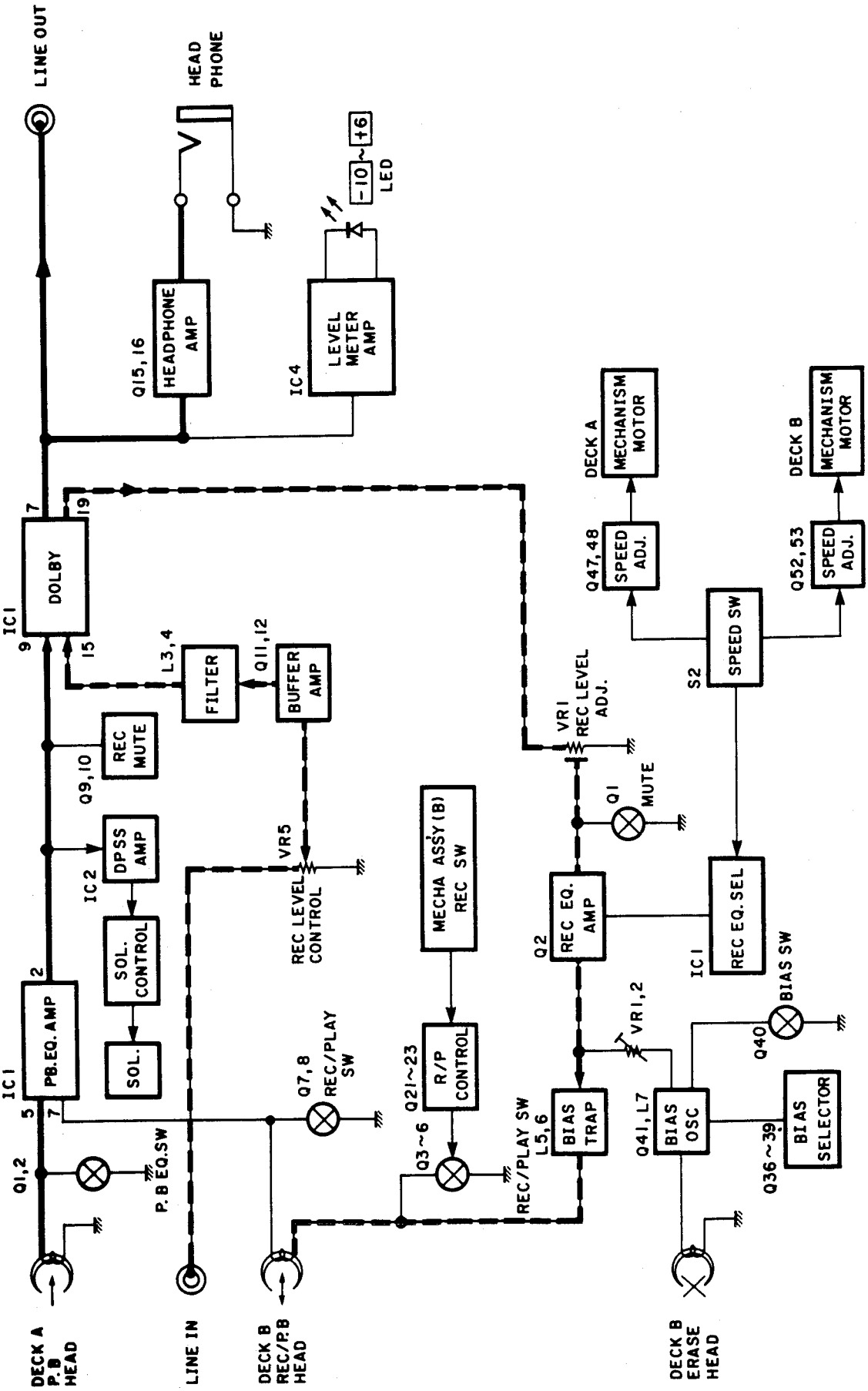
7. Remove the belt ⓬ attached to the B mechanism.
8. Remove the four screws ⓭ attached to the B mechanism.
9. Remove the four screws ⓮ attached to the A mechanism.
   NOTE: Note that there are two A mechanism lug terminals (GND) only on the upper side.



10. Being careful of the B mechanism sub panel, rotate the mechanism in direction ⓯ and remove it from the rear.
    NOTE: Pay attention when attaching as there are two knobs ⓰.
11. Remove the A mechanism in direction ⓱.



BLOCK LEVEL DIAGRAM



CIRCUIT DESCRIPTION

Function of Components

Recording/Playback Unit (X28-1770-11)

Component	Use/Function	Operation/Conditions/Interchangeability
Q1, 2	Deck A playback EQ selection (SW)	NOR. SPEED: ON, HI SPEED: OFF
Q3~6	R/P selection (SW)	STOP/B PB: ON, REC/NOR. DUB/HI-DUB: OFF
Q7, 8	R/P selection (SW)	STOP/B PB: OFF, REC/NOR. DUB/HI-DUB: ON
Q9, 10	Rec mute (SW)	REC: ON
Q11, 12	Line buffer amp (Amp)	
Q13, 14	Line mute (SW)	STOP/DPSS: ON
Q15, 16	Phones amp (Amp)	
Q21	R/P control (SW)	REC/NOR. DUB/HI-DUB: ON, B PB: OFF
Q22	R/P control (SW)	REC/NOR. DUB/HI-DUB: OFF, B PB: ON
Q23	R/P control (SW)	REC/NOR. DUB/HI-DUB: OFF, B PB: ON
Q24	PB EQ control (SW)	ON except for A PB
Q25	A/B control (SW)	A PB: ON
Q26	Dub control (SW)	REC/DUB/HI-DUB: OFF, B PB: ON
Q27	Dub control (SW)	A PB: ON (except for REC)
Q29	14 V regulation (Reg)	
Q30	Dolby switch (SW)	NOR. DUB/HI-DUB: ON
Q31	NR LED control (SW)	NOR. DUB/HI-DUB: ON
Q32	Mute control (SW)	A PB/CUE/REV: ON
Q33	Mute control (SW)	B PB: ON except for A PB/CUE/REV
Q34	Mute control (SW)	DPSS: ON, STOP: ON
Q35	Line mute drive (SW)	DPSS: ON, STOP: ON
Q36	Tape selector (SW)	DECK B METAL TAPE: ON
Q37	Bias selection (SW)	DECK B METAL TAPE: ON
Q38	Bias selection (SW)	DECK B CrO_2 TAPE: ON
Q39	Bias switch (SW)	REC/NOR. DUB/HI-DUB: ON
Q40	Bias switch (SW)	ON directly after power ON

CIRCUIT DESCRIPTION

Recording/Playback Unit (X28-1770-11)

Component	Use/Function	Operation/Conditions/Interchangeability
Q41	Bias oscillation (OSC)	105 kHz
Q42	Power off detection (SW)	POWER ON: ON
Q43	Mute control (SW)	PB/REC/NOR. DUB/HI-DUB: ON
Q44	Mute control (SW)	PB/REC/NOR. DUB/HI-DUB: OFF
Q45	Mute control (SW)	REC: ON instantaneously
Q46	Mute drive (SW)	STOP: ON
Q47	A motor speed control (SW)	NOR. SPEED: ON
Q48	A motor speed control (SW)	NOR. SPEED: ON
Q49	DPSS solenoid control (SW)	A PB: ON
Q50	Voltage limiter (Reg.)	Limits voltage when increased power supply voltage
*Q51	Direction LED control (SW)	REVERSE: ON
Q52	B motor speed control (SW)	NOR. SPEED: ON
Q53	B motor speed control (SW)	NOR. SPEED: ON
Q54	B motor control (SW)	RELAY PLAY SW OFF: OFF, RELAY PLAY SW ON and A PB: ON
Q55	B motor control (SW)	RELAY PLAY SW OFF: ON, RELAY PLAY SW ON and A PB: OFF
IC1	REC EQ selection (4 Tr array)	During REC (including NOR., DUB) and HI-DUB, selects REC EQ for each type of tape
IC2	DPSS	Music detection (for previous or following selection)
IC3	18 V regulated power supply	
IC4	Meter	5 × 2 points, −10, −6, 0, +3, +6 dB
IC5	Mute timing 4 × EXOR	Instantaneously HI during REC, speed switching, A PB

MECHANISM OPERATION

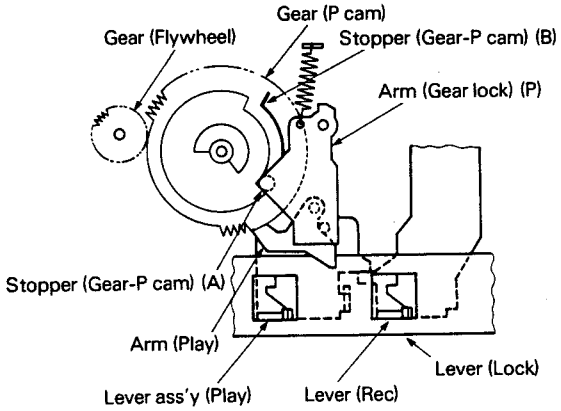
1. Outline of Mechanical Operations

(1) The KX-65CW is equipped with a rotating head auto reverse mechanism permitting switching at random of the direction and mode.
(2) Light operation mechanisms with power assist systems are used for the PLAY and REC operations ("one touch record method").
(3) A mechanical auto stop function is activated, depending on the mode selected.
(4) The following is an outline of the operations of the various parts:
   a. **Operation switching:** Mechanical, soft touch
   b. **Driving:** 1 motor, belt driving
   c. **Heads:** Record, play, and erase combination head, rotating type
   d. **Auto stop:** Mechanical full auto stop
   e. **Tape end detection:** Mechanical
   f. **Auto reverse operation:** Mechanical
   g. **Operations:** Button lock
   h. **Record button:** One touch recording
   i. **Reverse mode:** Mechanical lever
   j. **Direction switching:** Mechanical lever
   k. **Cue mechanism:** Mechanical lever
   l. **Eject:** Stop →Eject system

2. STOP Mode

Figure 1 shows the STOP mode for the PLAY/REC power assist mechanism. In this mode, Arm (Gear lock) (P) is locked on the Stopper (Gear-P cam) (A) so the Gear (P cam) and Gear (Flywheel) are not engaged. (When the power is turned on, the motor rotates constantly, so the Gear (Flywheel), which is on the same shaft as the flywheel, is also driven by the belt, and rotates constantly.)

Figure 1 STOP Mode
[As seen from the motor side]

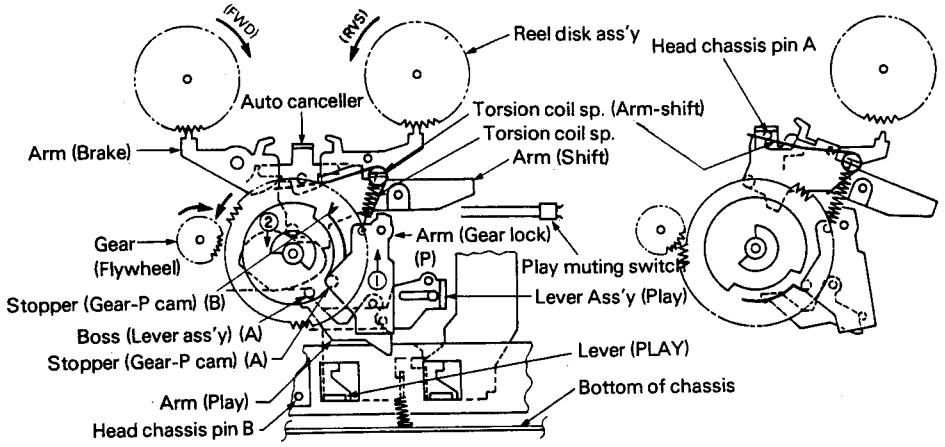


3. PLAY Mode

(1) When the PLAY button is depressed, the Lever (Play) and Arm (Play) move simultaneously in direction ① and, because of the shape of the Arm (Play), touch the P operation lever (A) boss, moving Arm (Gear lock) (P) and detaching it from the Stopper (Gear-P cam) (A)
(2) The Gear (P cam) is pressed in direction ② by Arm (Shift) (P). For this reason, the Gear (P cam) begins to rotate in direction ② (conterclockwise) and engages with the Gear (Flywheel)
(3) When the Gear (Flywheel) and Gear (P cam) are engaged, the force of the motor and flywheel rotates the Gear (P cam) further until it comes into contact with stopper B. When stopped, the capstan gear and Gear (P cam) are disengaged. (Figure 3)
(4) By the time the Gear (Flywheel) and Gear (P cam) engage and stopper B is reached, the ARM (Shift) is lifted due to the shape of the cam on the Gear (P cam), the PLAY muting switch is turned on, and simultaneously the Arm (Shift) spring attached to the Arm (Shift) lifts head chassis pin A and the auto canceller. As head chassis pin A is caulked onto the head chassis, it functions in conjunction with the head chassis.

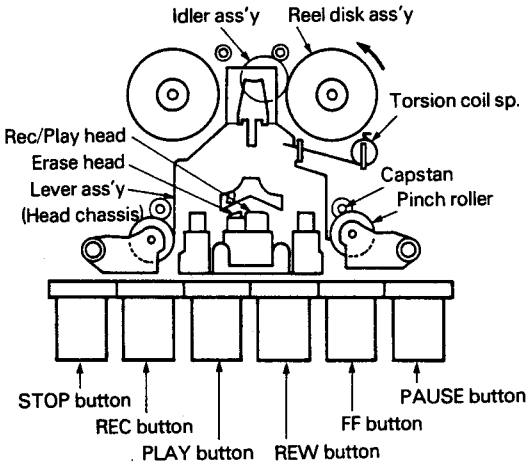
MECHANISM OPERATION

Figure 2 STOP Mode → Figure 3 PLAY Mode
(The ↻ arrows indicate the direction of gear rotation)
[As seen from the motor side]



(5) At the same time, the auto canceller rises and pushes down the Arm's (Brake) hook, and the brake is detached from the Reel disk ass'y.
(6) At the same time, the head chassis rises and pushes up the Torsion coil spring, pressing the pinch roller against the capstan, and beginning tape tr
(7) At the same time, the Idler ass'y is also lift up reel plate begins to rotate, tape take and the unit is set to the play mode.

Figure 4 PLAY MODE
(PLAY Operation in FORWARD Mode)
[As seen from the button side]



4. PLAY → STOP Operation

(1) When the STOP button is pressed and the PLAY button is released, the Lever (Play) and Arm (Play) descend. When the Arm (Play) descends, Arm (Gear lock) (P) is detached from Gear (P cam) stopper (B) by the force of the Torsion coil spring.
(2) When Arm (Gear lock) (P) is detached from Stopper (Gear-P cam) (B), the Gear (P cam) is rotated counter-clockwise by such forces as that of the bending Arm (Shift) spring and stops when the Stopper (Gear-P cam) (A) comes into contact with Arm (Gear lock) (P). When the Arm (Shift) descends, the PLAY switch is simultaneously turned off.
(3) At the same time, the head chassis descends, the idler is pressed down, the take-up reel plate stops, and tape take-up stops.
(4) At the same time, the Torsion coil spring is pressed down, the pinch roller and capstan are detached from each other, and tape travel stops.
(5) At the same time, the auto canceller descends, the Arm (Brake) hook is lifted, the take-up and feed reel plates stop rotating, and the unit is set to the STOP mode.

MECHANISM OPERATION

5. PLAY → PAUSE Operation → PAUSE Release

PAUSE Operation

(1) When the PAUSE button is pressed during the PLAY mode, the PAUSE lever moves Arm (Gear lock) (FR) in direction ③ and detaches it from the Stopper (Gear-FR cam) (A) stopper A. The Gear (FR cam) is pressed in direction ④ by Arm (Shift) (F/R), rotates, engages with the capstan gear, then rotates and stops when the FR cam gear stopper B comes into contact with Arm (Gear lock) (F/R). When stopped, the Gear (FR cam) and Gear (Flywheel) are disengaged.

(2) At the same time, the shape of the Gear (FR cam) operates Arm (Shift) (F/R). Due to this operation, Arm (Shift) (F/R) presses down head chassis pin B, and the unit is set to the PAUSE mode. Also, the pinch roller and takeup idler are set to the PAUSE position* (see below), and the brake is returned to the STOP position and the unit is set to the PAUSE mode.

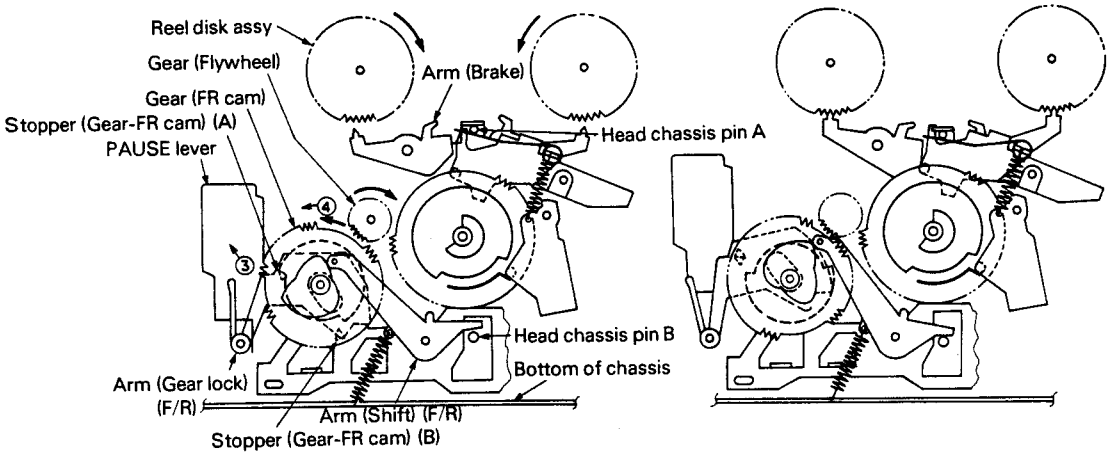
* PAUSE position

- The head is lowered 1.45 mm (center value) from the PLAY position.
- The pinch roller is not in contact with the capstan.
- The take-up idler is not in contact with the reel plate.

Figure 5 PLAY MODE → Figure 6 PAUSE MODE

(The ↻ ↺ arrows indicate the direction of gear rotation)

[As seen from the motor side]



PAUSE Release

(3) Next, when the PAUSE button is pressed once again, the pause ratchet mechanism is released and the Torsion coil spring returns the PAUSE button and lever to their original positions.

(4) Once the PAUSE lever has been returned to its original position, Arm (Gear lock) (F/R) is detached from the Stopper (Gear-FR cam) (FR). When this happens, the Gear (FR cam) is rotated by the force of the Arm (Shift) (F/R), engages with the gear (Flywheel), and rotates until stopper A comes into contact with Arm (Gear lock) (F/R).

(5) After this, the unit returns to the PLAY mode and tape travel is resumed.

6. REC Operation

(1) When the REC button is depressed, the REC switch is turned on, the Lever (Rec) lifts the Lever (Play) moving REC arm (A) and the REC operation arm.

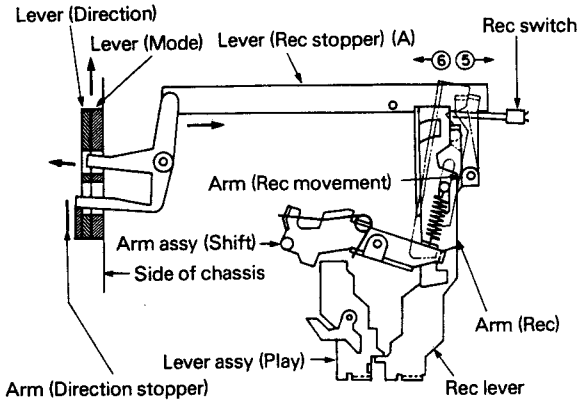
(2) The Arm (Rec movement) is moved in direction ⑤, and the Lever (Rec movement) is moved in the direction of the arrow via Lever (Rec stopper) (A). The Lever (Rec movement) is inserted into the square hole in the Lever (Direction), and the direction can no longer be switched. (Direction switching is not possible during the REC mode.)

(3) When the Lever Assy (Play) and Lever (Rec) are locked, Arm (Rec) moves in direction ⑥ to a position at which it is in relationship to the arm assy (Shift). (Shift).
After they are locked, the shift arm ASSY moves as during the PLAY operation. At this time, Arm (Rec) is pushed down by the Arm assy (Shift).

(4) Other operations are the same as during the PLAY mode.
Tape travel begins and the unit is set to the REC mode.

MECHANISM OPERATION

Figure 7 REC MODE
[As seen from the motor side]



* The above figure does not show the Gear (P cam), reel plate, brake, etc.

7. REC → PAUSE → PAUSE Release

(1) The operation of the various parts when switching from REC to PAUSE is the same as when switching from PLAY to PAUSE. The REC switch and REC/PLAY switch stay on the REC side and tape travel stops.
* NOTE: The REC/PLAY switch is located outside of the mechanical section.

(2) The operation of the parts when the PAUSE mode is released is also the same as explained in the section 5, "PLAY → PAUSE Mode → PAUSE Release". Tape travel resumes and the unit is set to the REC mode.

8. REC → STOP Mode

(1) When the STOP button is pressed and the REC button lock is released, the Lever (Play) and Lever (Rec) are returned by the return spring, and the REC switch is turned off. At the same time, the PLAY arm returns and Arm (Gear lock) (P) is detached from the Stopper (Gear-P cam) (B).

(2) When the Arm (Gear lock) (P) is detached from the Stopper (Gear-P cam) (B), the Gear (P cam) is rotated counterclockwise by the force of the compressed shift arm spring, Stopper (Gear-P cam) (A) comes into contact with Arm (Gear lock) (P) and the gear stops. (Same as PLAY → STOP)

(3) At the same time, the Arm (Rec movement) and Arm (Rec) return to their original positions, and the switch is switched from REC to PLAY.

(4) The REC → STOP operation is the same as the PLAY → STOP operation except for the operations concerning Arm (Rec movement) and Arm (Rec).

MECHANISM OPERATION

9. FF (REW) Operation

(1) When the FF (or REW) button is pressed, the FF (REW) lever presses up Arm (Gear lock) (F/R), the Arm (F/R), and the auto canceller and locks.

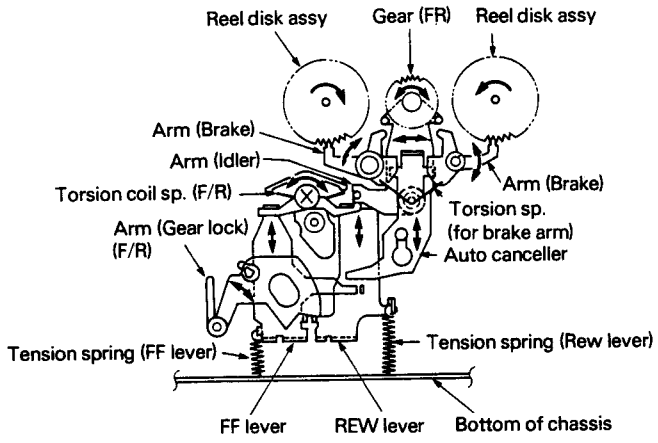
(2) Arm (Gear lock) (F/R) operates in the same way as in the PAUSE mode. Thus, the Gear (FR cam) rotates, and the shape of the cam moves Arm (Shift) (F/R). This operation lowers the head chassis during the PLAY mode, returns the pinch roller and the idler to the PAUSE position, and makes CUE (or REVIEW) possible.

(3) The auto canceller rises and pushes down the Arm (Brake)'s hook, detaching the brake from the reel plate.

(4) At the same time, the Arm (FR) moves the Arm (Idler) to the left (to the right), and the Gear (FR) is engaged with the reel gear. The Reel disk ass'y then begins to rotate and the FF (REW) operation begins.

Figure 8 FF (REW) MECHANISM (STOP Mode)

[As seen from the motor side]



* The arrows on the figure indicate the directions of operation.

10. AUTO STOP Operation

(1) Outline

When during the recording/playback, CUE, REVIEW, fast forward, or rewind operations the tape end is reached and the rotation of the take-up reel stops, this is detected by auto sensor, the linked parts* release the lock cam, and the unit enters the STOP mode.

However, this is true when the tape reaches the end in either the FORWARD or REVERSE direction in the ⇄ mode and during playback in the REVERSE direction in the ⇆ mode. However, during recording this is also true when the tape reaches the end either in the REVERSE direction in the ⇆ mode, or in the FORWARD direction when there is no accidental erasure prevention tab for the cassette half's REVERSE direction.

* "Operation of Linked Parts" is explained in section (3) below.

(2) Operation of Auto Sensor

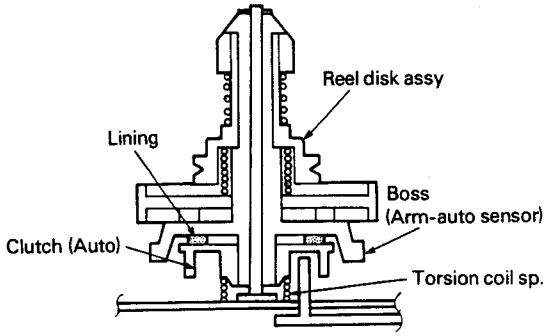
a. During the STOP mode (when the power is on), the auto support arm exerts a clockwise returning force and the cam shape of the auto cam gear moves the sensor counterclockwise, thus the sensor moves up and down like a seesaw.

b. During the recording/playback, CUE, REVIEW, fast forward, and rewind operations, the Arm (Auto brake) is lifted and detached by the auto canceller, and at the same time the Reel disk assy begins to retate. The rotative force of the auto clutch gives a clockwise returning force and the cam shape of the Gear (Auto) moves the sensor up and down like a seesaw.

The auto clutch is lifted by a weak Torsion coil spring and rotated by the frictional force of the felt attached to the bottom of the Reel disk assy.

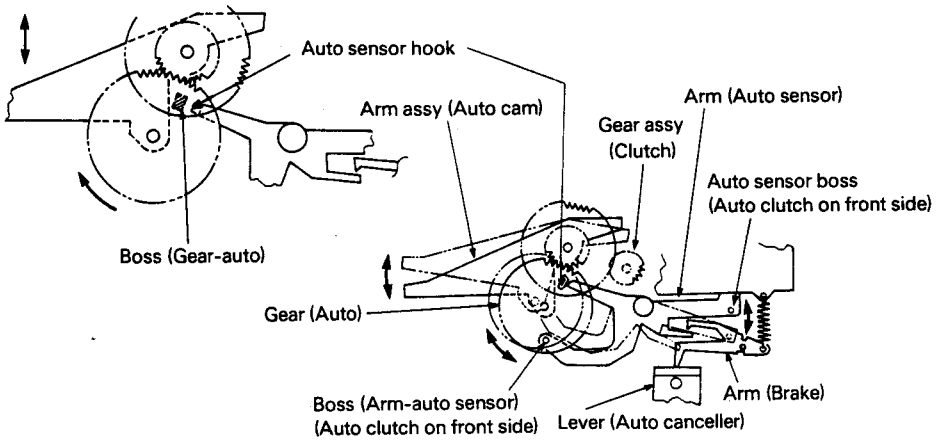
MECHANISM OPERATION

Figure 9 REEL STRUCTURE



c. When the tape reaches the end, the take-up reel stops and the rotative force of the Clutch (Auto) is gone, so the clockwise returning force is also gone.
d. For this reason, the auto sensor is detached from the cam shape of the Gear (Auto), Boss (Gear-auto) catches on the Auto Sensor hook, the Gear (Auto) moves with the Arm assy (Auto cam) as shown in Figure 10 with the hook as its axis, its boss is detached from the Boss (Arm-auto sensor) and it returns to its original position.

Figure 10 AUTO MECHANISM
(During Recording, Playback, FF, and REW)
[As seen from the motor side] (Rear side)



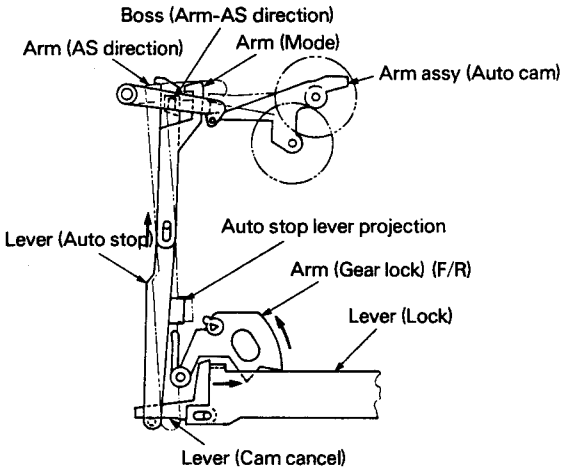
* The arrows on the diagram indicate the direction of operation.

MECHANISM OPERATION

(3) Operation of Linked Parts

a. The Arm assy (Auto cam) has the function of lifting the Arm (AS direction).
b. The Arm (AS direction) simultaneously lifts the Lever (Auto stop), which operates the Lever (Cam cancel). When the Lever (Auto stop) is at a slant, it is detached from the Boss (Arm-AS direction) and does not lift the Lever (Auto stop).
c. The Lever (Cam cancel) pushes the Lever (Lock) as shown in the figure, the locked lever is returned to its original position, and the unit enters the STOP mode.

Figure 11 LINKED PARTS AUTO MECHANISM
[As seen from the motor side]



(4) Conditions for AUTO STOP Operation

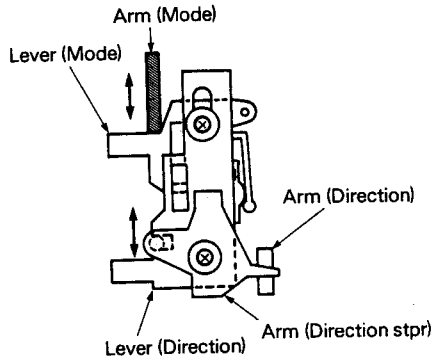
a. During playback in the ⇄ mode, when the end of the tape is reached in the FORWARD or REVERSE directions. In the ⊃ mode, when the end of the tape is reached in the REVERSE direction.
b. During recording in the ⇄ mode, when the end of the tape is reached in the FORWARD or REVERSE directions. In the ⊃ mode, when the end of the tape is reached in the REVERSE direction, or in the FORWARD direction when there is no accidental erasure prevention tab for the cassette half's REVERSE direction.
c. In the FF or REW modes when the end of the tape is reached.

* In the FF or REW modes, as explained in section 9 (1), the Arm (Gear lock) (F/R) is moved in the direction of the arrow on the figure. In order that auto stop may function, Arm (Gear lock) (F/R) comes against the projection on the Lever (Auto stop) even when it is slanted, pushing it and setting it to the vertical position.

MECHANISM OPERATION

11. Description of Mode Lever and Direction Lever

Figure 12 LEVER MECHANISM [As seen from a side]



(1) Mode Lever: ⇄ / ⊃ mode type

a. When lever is in lower position: ⊃ mode

b. When lever is in upper position: → mode
← mode

For the ⇄ / ⊃ mode type, when the Lever (Mode) is in the upper position, the Arm (Mode) constantly sets the Lever (Auto stop) to the vertical position, setting the unit to the → (←) mode. When in the lower position, it sets the unit to the ← mode only when in the REVERSE direction.

(2) Direction Lever

a. When the lever is lowered, the Arm (Direction stpr) is moved counterclockwise, and at the same time the Arm (Direction) is used as a lever and moved clockwise, and the linked parts rotate the head (180°). When rotation is completed, the lever automatically returns to its original position. (For a description of the linked parts, refer to section 12 (1), (2) and (3).)

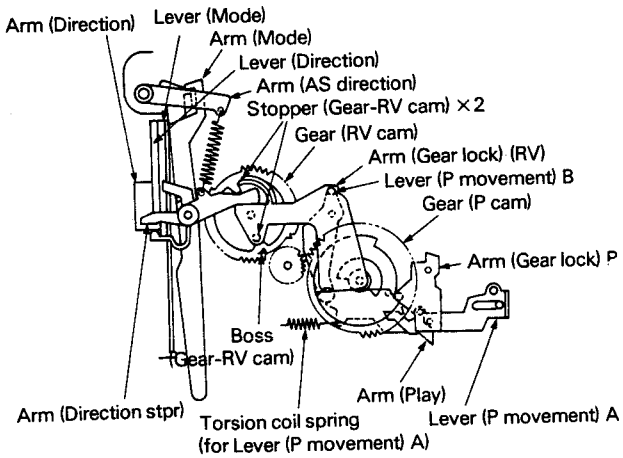
b. During recording, the lever cannot be operated. (Refer to Section 6 (2).) Thus the head cannot be rotated during recording.

12. Direction Switching Operation (FORWARD ↔ REVERSE)

(1) Direction Switching Mechanism

Figure 13 DIRECTION SWITCHING MECHANISM (STOP Mode)

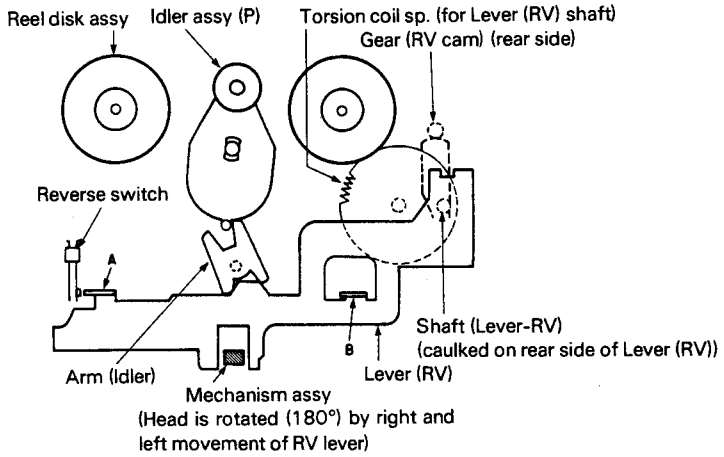
[As seen from the motor side]



MECHANISM OPERATION

Figure 14 DIRECTION LEVER MECHANISM (STOP Mode)

[As seen from the head side, with head chassis removed]



a. Figure 14 shows the mechanism for the FORWARD direction. For the REVERSE direction, the Lever (RV) moves to the left, tilting the Arm (Idler) to the right. Also, when the Lever (RV) is positioned at the REVERSE side, part A on the Lever (RV) turns the REVERSE switch on.

b. The Arm (Idler) functions to switch the Idler (P) between the FORWARD and REVERSE directions.

c. The Lever (RV) functions to prevent the pinch roller for the opposite direction of tape travel from pinching against the capstan shaft.
In Figure 14, part A on the RV is in relationship with the pinch roller shaft. At the REVERSE side, part B is in relationship with the pinch roller shaft.

(2) Direction Switching in the STOP Mode (Refer to Figures 13 and 14)

a. When the Lever (Direction) is lowered, the Arm (Direction stpr) is moved counterclockwise and at the same time Arm (Direction) (used as a lever) is moved clockwise.

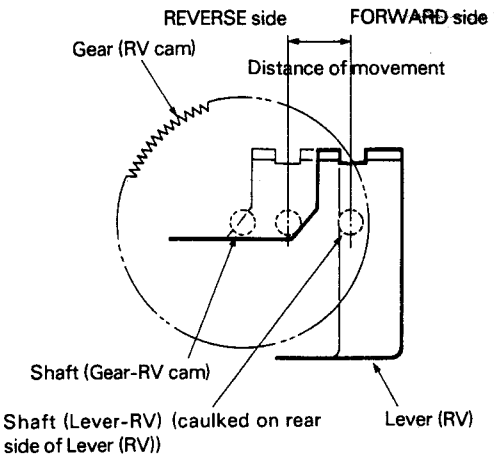
b. At the same time, the Arm (Direction) moves counterclockwise, detaching it from the Stopper (Gear-RV cam).

c. When Arm (Gear lock) (RV) is detached from the Stopper (Gear-RV cam), the Gear (RV cam) is rotated counterclockwise by the Torsion coil spring attached to the Shaft (Lever-RV), engaging it with the Gear (Flywheel).
The torsion coil spring forces the Gear (RV cam) onto the Gear (Flywheel), only rotating it when they are engaged.

d. When the Gear (RV cam) is engagerd on the Gear (Flywheel), it is rotated up to its next stopper (conditioned that the power switch is on). During the time it is rotating, the shape of the gear (RV cam)'s cam moves the Shaft (Lever—RV) either to the right or left. (Left-RVS side; right—FWD side)

MECHANISM OPERATION

Figure 15 RV LEVER MOVEMENT
[As seen from the button side]

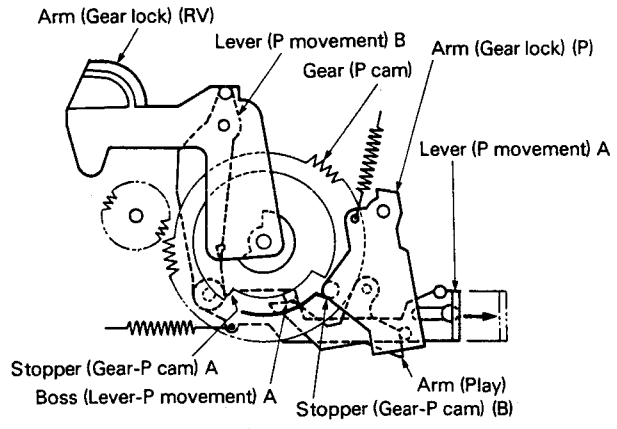


e. As the Lever (RV) moves, the Arm (Idler) and return gear move with it.
f. The Arm (Idler) functions to switch the Idler ass'y (P) between the FORWARD and REVERSE directions.
g. The return gear functions to rotate the head (180°) and switch is between the FORWARD and REVERSE directions. (Refer to the explanation on the return gear at Figure 14)
h. When the Gear (RV cam) rotates and switches between the FORWARD and REVERSE directions, Arm (Gear lock) (RV) comes into contact with the Boss (Gear-RV cam), relocking onto the stopper (Gear-RV cam). (180° rotation of Gear (RV cam))
Arm (Gear lock) (RV) is linked to Lever (P movement) (A) and (B), and uses the force of the Lever (P movement) (A) Torsion coil spring to constantly keep rotation clockwise.
i. When arm (Gear lock) (RV) is relocked, the Arm (Direction), Arm (Direction stpr), and Lever (Direction) are returned to their original positions. The direction switching operation has now been completed.

(3) Direction Switching operation in the PLAY Mode

a. The switching operation in the PLAY mode is basically the same as in the STOP mode, but as the unit is in the play mode, the head chassis is first lowered (to the position when in the STOP mode), then rotated (180°), then lifted back into position, and playback is resumed.

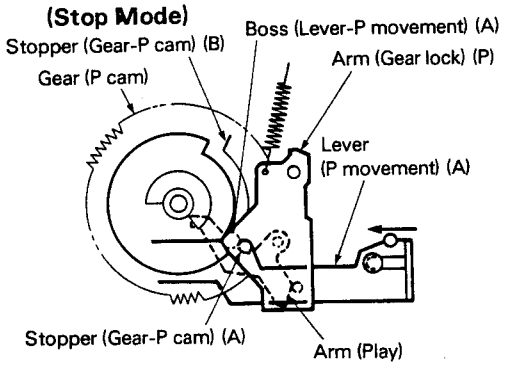
Figure 16 DIRECTION SWITCHING OPERATION (PLAY Mode)
[As seen from the motor side]



MECHANISM OPERATION

b. When the direction lever is lowered during the PLAY mode, the linked parts operate in the same way as for section (2) above (Stop Mode), and Arm (Gear lock) (RV) is rotated counterclockwise.
c. During this operation, the movement to the right of Boss (Lever-P movement) (A), caused by its linkage with Arm (Gear lock) (RV), detaches the Arm (Play).
d. When the Arm (Play) is detached, Arm (Gear lock) (P) is detached from the Stopper (Gear-P cam) (B) by the force of the Torsion coil spring, and the PLAY → STOP operation is performed. At this time, Arm (Gear lock) (RV) Stopper (Gear-RV cam) and the Gear (RV cam) are released, and the Gear (RV cam) begins to rotate.
* (Refer to section 4, "PLAY → STOP Operation")
e. When stopped, STOP mode direction switching operations (2) b—i are performed.
f. When Arm (Gear lock) (RV) is once again locked, Lever (P movement) (A) returns to its original position.
g. At the same time, Lever (P movement) (A) boss moves the play arm counterclockwise by the force of the Torsion coil spring.
h. At the same time, the PLAY arm moves Arm (Gear lock) (P) counterclockwise, detaching it from the Stopper (Gear-P cam) (A).

Figure 17 DIRECTION SWITCHING OPERATION



i. When Arm (Gear lock) (P) is detached, the playback operation begins, and the unit is once again in the PLAY mode.
Direction switching in the PLAY mode has now been completed.
* The following is an easy-to-understand summary of operations b—i:
Lever lowered during playback — (c) → Head chassis lowered, unit set to STOP mode (d) → Head rotated (180°), switched between forward and reverse (e) — (f, g, h) → Head chassis lifted, unit reset to PLAY mode (i).

13. AUTO Direction Switching Operation

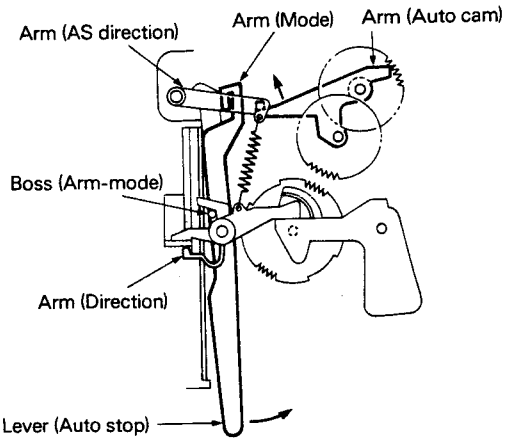
(1) Outline

When during recording or playback the end of the tape is reached and the take-up reel stops rotating, this is detected by the auto sensor, and the linked parts automatically switch the direction from forward to reverse when in the ⇄ mode.

(2) Operation

a. As described in the section on the AUTO STOP operation, the Arm (Auto cam) has the function of lifting the Arm (AS direction). When the Lever (Auto stop) is pushed in the direction of the arrow and is not vertical, the auto direction operation is performed.
b. When the Arm (AS direction) is lifted, the Arm (Mode) is also lifted. With this lifting force, the Boss (Arm-mode) moves Arm (Direction) clockwise.
c. After the Arm (Direction) moves clockwise, the same operations as explained in section 12 (3) (direction switching operation in the PLAY mode) are performed, and the auto direction switching operation is completed.

Figure 18 AUTO CONTINUOUS MECHANISM



MECHANISM OPERATION

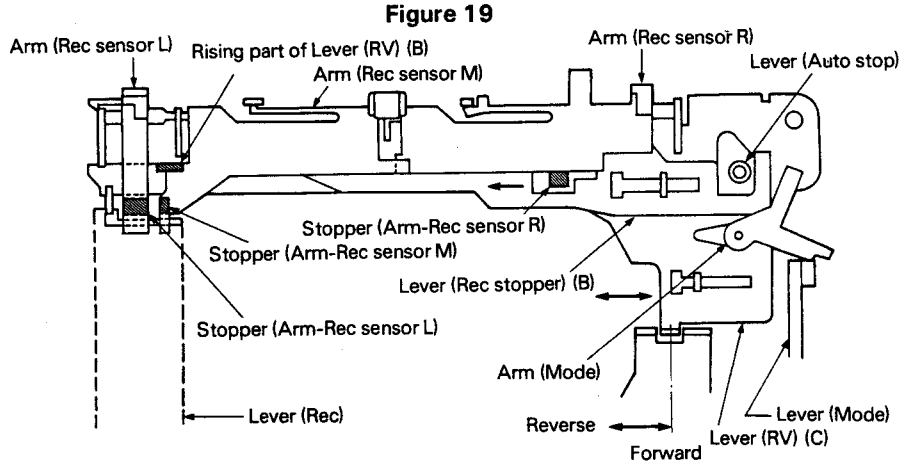
14. REC Sensor Operation

(1) Outline

The REC sensors detect whether the accidental erasure prevention tabs on the cassette halves are present. If they are, they allow recording, and if not, they prevent recording.

(2) REC Sensor Mechanism

Figure 19



* The rising movement of the Lever (RV) (B) produces the following effects:
  When in FORWARD direction: Stopper (ARM-REC sensor M) is released
  When in REVERSE direction: Stopper (ARM-REC sensor L) is released
* On the FORWARD side, the operation depends on ARM (REC sensor L).
  On the REVERSE side, the operaion depends on ARM (REC sensor M) and (R).

(3) Operation When Both Accidental Erasure Prevention Tabs are Present

a. When cassette halves are set onto this mechanism, the REC sensors are automatically lifted, the Stopper (ARM-REC sensor) (L), (M) are released, and the Lever (REC) can be depressed for either the FORWARD or REVERSE directions.

b. When the Lever (REC) is pressed while in the FORWARD direction, REC stopper (A) (refer to section 6, Recording Operation) and REC stopper B which is connected by spring, move against the Stopper (ARM-REC sensor R). Thus when the end of the tape is reached in the FORWARD direction, the direction is switched to the REVERSE side.
   If the Stopper (ARM-REC sensor R) is not lifted
   * (when the tabs have been removed), REC stopper (B) moves in the direction of the arrow and the unit is set to the auto stop mode.

c. In the REVERSE direction, the movement of Lever (RV) (C) sets the Lever (Auto stop) to the vertical position, and the unit is set to the AUTO STOP mode when the end of the tape is reached, so the direction is not switched to FORWARD.
   (Refer to section 10, AUTO STOP Operation)

MECHANISM OPERATION

15.STOP → EJECT Mechanism

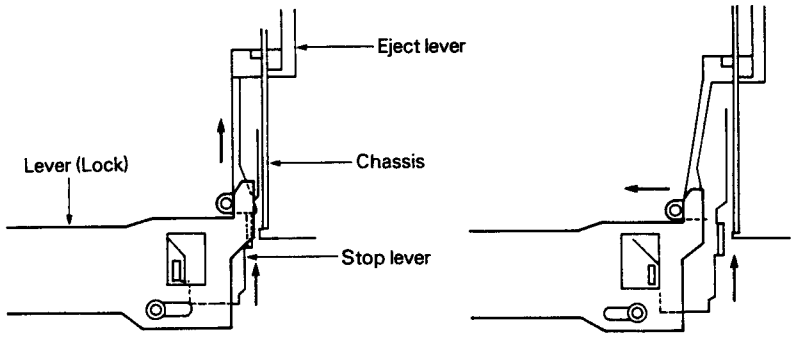
IF the PLAY, FF, or REW levers are locked, the EJECT lever is pushed to the inside by Lever (Lock), so if the STOP lever releases the other levers (PLAY, FF, REW), the EJECT lever and the STOP lever do not come into contact and the eject operation is not performed.

When the STOP lever is pressed when in the STOP mode, since the EJECT lever is not pushed to the inside, the STOP lever comes in contact with the EJECT lever and the eject operation is possible.

STOP → EJECT OPERATION

[As seen from the motor side]

Figure 20



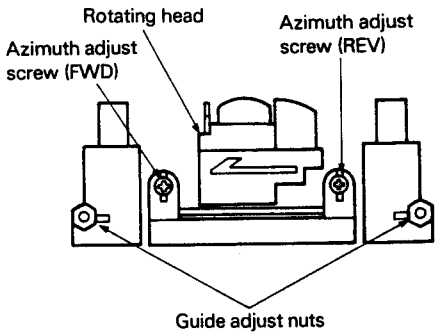
STOP Mode

PLAY, FF, or REW Modes

16.Others

(A) Inset the azimuth adjustment tape and set the unit to the PLAY mode.

Adjust the azimuth adjust screw (FWD) so that the value shown by the voltmeter needle is maximum.
Next set the unit to the REV PLAY mode, and adjust the azimuth adjust screw (REV) so that the value shown by the voltmeter needle is maximum.

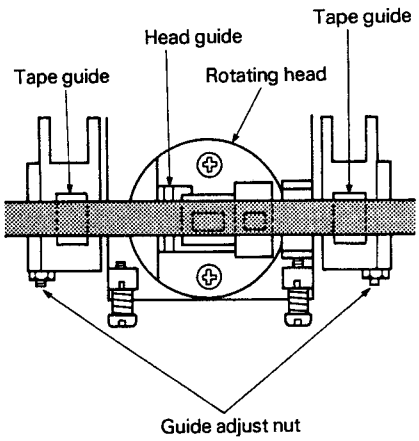


MECHANISM OPERATION

(B) Tape Travel Adjustment

Insert the mirror tape and set the unit to the PLAY mode. Check that there is no curl in the head guide or meandering at the pinch rollers for both directions.

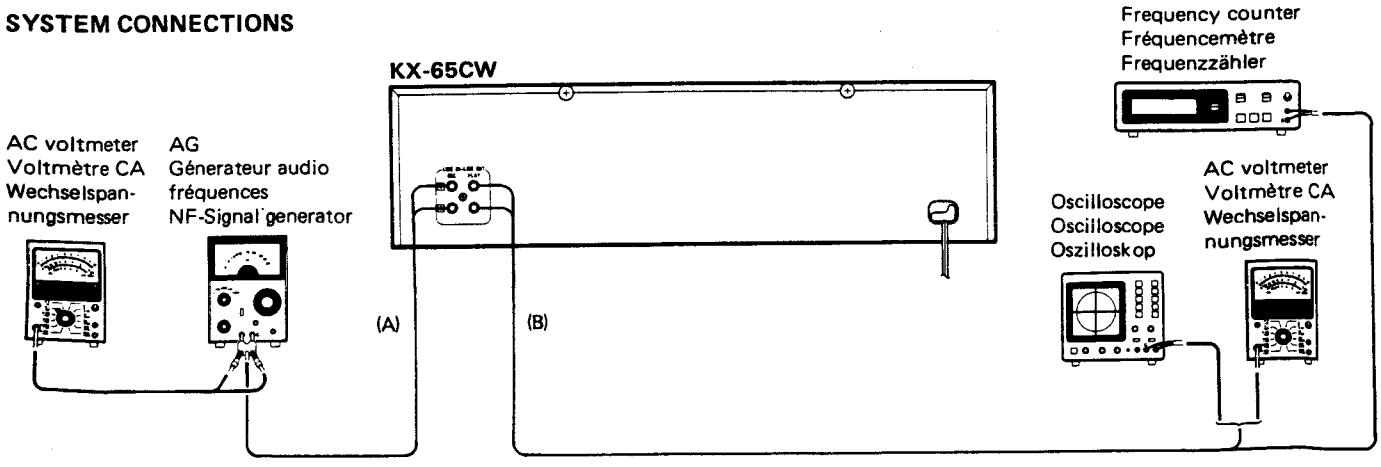
If there is curl, adjust the tape guide height using the guide adjust nut so that no curl is produced, then readjust the azimuth. Next use the mirror tape to check that there is no curl in the head guide or meandering at the pinch rollers.



ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	CASSETTE TAPE DECK SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
CASSETTE DECK SECTION		TAPE: NORMAL, DOLBY: OFF, INPUT: LINE				0dBs = 0.775V	
I REC/PLAY HEAD							
[1]	DEMAGNETIZATION	–	–	POWER: OFF Remove the cassette door.	REC/PLAY head	Demagnetize the REC/PLAY head with a head demagnetizer.	
[2]	CLEANING	–	–	PLAY	REC/PLAY head erase head, capstan, pinch roller.	Clean the REC/PLAY head erase head, capstan and pinch roller using a cotton swab slightly damped with alcohol.	
[3]	AZIMUTH	MTT-114 10kHz, -10dB	(B)	PLAY	Azimuth adjustment screw	Minimum output	
II PC BOARD (X28-1770)							
(i)	TAPE SPEED (HI SPEED)	MTT-111 TCC-110 3kHz	(B)	Connect a jumper wire between GND and TPA(TPB) PLAY	(X28-1770) DECK A: VR4 DECK B: VR7	Adjust the tape speed so that a 6kHz signal is produced at the center of the tape.	(a)
(ii)	TAPE SPEED (NORMAL)	MTT-111 TCC-110 3kHz	(B)	PLAY	(X28-1770) DECK A: VR3 DECK B: VR6	Adjust the tape speed so that a 3kHz signal is produced at the center of the tape.	(b)
III PC BOARD (X28-1770, X87-1100, X87-1050)							
<1>	PLAYBACK LEVEL	(a) MTT-150 TCC-130 400Hz	(B)	PLAY	DECK A, DT 1: VR1(L) VR2(R) DECK B: VR3(L) VR4(R)	Output level: -6.0dBs	(c)
		(b) MTT-256 TCC-162 315Hz				Output level: -9.0dBs	
		(c) MTT-256U 315Hz				Output level: -5.0dBs	
<2>	BIAS CURRENT	(A) 1kHz, -30dBs 10kHz, -30dBs	(B)	Adjust VR5 so that the REC monitor output becomes -29dBs at 1kHz, then record and reproduce signal of 1kHz and 10kHz in alternation.	(X28-1770) VR1(L) VR2(R)	Record 1kHz and 10kHz in alternation and adjust the variable resistors which control the bias current so that the same playback level is obtained.	(d)
<3>	RECORD LEVEL	(A) 1kHz, -10dBs	(B)	Record and reproduce a 1kHz signal under the conditions set in <2>.	(X87-1050) VR1	Adjust the variable resistors so that a playback level of -9dBs is obtained.	(e)

SYSTEM CONNECTIONS



REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU MAGNETO-PHONE A CASSETTE	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG.
SECTION DU MAGNETOPHONE		TAPE: NORMAL, DOLBY: OFF, ENTREE: LINE				0dBs = 0,775V	
I TETE D'ENREGISTREMENT/LECTURE							
[1]	DEMAGNETISATION	–	–	POWER: OFF Eloigner la porte.	Tête D'ENREGISTREMENT/LECTURE	Demagnétiser la tête D'ENREGISTREMENT/LECTURE avec un démagnetiseur de tete.	
[2]	NETTOYAGE	–	–	PLAY	Tête D'ENREGISTREMENT/LECTURE tête d'effacement, cabestan, galetpresseur.	Nettoyer la tête D'ENREGISTREMENT/LECTURE la tete d'effacement, le cabestan et le galetpresseur avec un coton-tige légèrement imbibé d'alcool.	
[3]	AZIMUT	MTT-114 10kHz. -10dB	(B)	PLAY	Vis d'azimut	Sortie minimale	
II PLAQUE IMPRIMEE (X28-1770)							
(i)	VITESSE DE DEFILEMENT (HI SPEED)	MTT-111 TCC-110 3kHz	(B)	Connecter un cablage entre les GND et TPA(TPB). PLAY	(X28-1770-10) DECK A: VR4 DECK B: VR7	Régler la vitesse de bande de façon qu'un signal de 6kHz soit produit au centre de la bande.	(a)
(ii)	VITESSE DE DEFILEMENT (NORMAL)	MTT-111 TCC-110 3kHz	(B)	PLAY	(X28-1770) DECK A: VR3 DECK B: VR6	Régler la vitesse de bande de façon qu'un signal de 3kHz soit produit au centre de la bande.	(b)
III PLAQUE IMPRIMEE (X28-1770,X87-1100,X87-1050)							
<1>	NIVEAU DE LECTURE	(a) MTT-111 TCC-130 400Hz (b) MTT-256 TCC-162 315Hz (c) MTT-256U 315Hz	(B)	PLAY	DECK A , DT 1: VR1(G) VR2(D) DECK B: VR3(G) VR4(D)	Niveau de sortie: -6,0dBs Niveau de sortie: -9,0dBs Niveau de sortie: -5,0dBs	(c)
<2>	COURANT DE POLARISATION	(A) 1kHz. -30dBs 10kHz. -30dBs	(B)	Régler VR5 de façon que la sortie de moniteur REC soit de -29dBs à 1kHz, puis en registrer et signaux de 1kHz et 10kHz en alternance.	(X28-1770) VR1(G) VR2(D)	Enregistrer un signal de 1kHz et 10kHz en alternance et ajuster les resistances variables qui commandent le courant de polarite de façon à obtenir le meme niveau de lecture.	(d)
<3>	NIVEAU D'ENREGISTREMENT	(A) 1kHz. -10dBs	(B)	Enregistrer et reproduire un signal de 1kHz dans les conditions précisées en <2>.	(X87-1050) VR1	Ajuster les résistances variables de façon à obtenir un niveau de lecture de -9dBs.	(e)

ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	KASSETTENGERäT-EINSTELLUNG	ABGLEICH PUNKTE	ABGLEICHEN FüR	ABB.
CASSETTEN-DECK-ABTEILUNG		TAPE: NORMAL, DOLBY: OFF, EINGANG: LINE				0dBs = 0.775V	
I AUFNAHME/WIEDERGABE-KOPF							
[1]	ENTMAGNETI-SIERUNG	–	–	POWER: OFF Den Kassettenfach deckel oben herausziehen.	AUFNAHME/ WIEDERGABE-Kopf	Entmagnetisierung von dem AUFNAHME/WIEDERGABE-Kopf mit einem Tonkopf Entmagnetisierungsdrossel.	
[2]	REINIGUNG	–	–	PLAY	AUFNAHME/ WIEDERGABE-Kopf Löschkopf, Tonwelle, Andruckrolle.	AUFNAHME/WIEDERGABE-Kopf, Löschkopf, Tonwelle und Andruckrolle mit einem leicht mit Alkohol befeuchteten Wattebausch reinigen.	
[3]	AZIMUT-EINSTELLUNG	MTT-114 10kHz. -10dB	(B)	PLAY	Azimut-Einstellschraube	Minimal Ausgang	
II GEDRUCKTE SCHALTPLATTE (X28-1770)							
(i)	BANDGESCH-WINDIGKEIT (HI SPEED)	MTT-111 TCC-110 3kHz	(B)	Einen Schaltdraht zwischen GND und TPA(TPB) anschließen. RLAY	(X28-1770-10) DECK A: VR4 DECK B: VR7	Die Bandgeschwindigkeit so justieren, daß ein 6kHz Signal auf der Mitte des Bands erzeugt wird.	(a)
(ii)	BANDGESCH-WINDIGKEIT (NORMAL)	MTT-111 TCC-110 3kHz	(B)	PLAY	(X28-1770) DECK A: VR3 DECK B: VR6	Die Bandgeschwindigkeit so justieren, daß ein 3kHz Signal auf der Mitte des Bands erzeugt wird.	(b)
III GEDRUCKTE SCHALTPLATTE (X28-1770,X87-1100,X87-1050)							
<1>	WIEDERGABE-PEGEL	(a) MTT-150 TCC-130 400Hz (b) MTT-256 TCC-162 315Hz (c) MTT-256U 315Hz	(B)	PLAY	DECK A , DT 1: VR1(L) VR2(R) DECK B: VR3(L) VR4(R)	Ausgangspegel: -6,0dBs Ausgangspegel: -9,0dBs Ausgangspegel: -5,0dBs	(c)
<2>	LEERLAUFSTROM	(A) 1kHz. -30dBs 10kHz. -30dBs	(B)	VR5 so justieren, daß der REC Monitorausgang -29dBs bei 1kHz wird, und danach abwechselnd Signale von 1kHz und 10kHz aufnehmen und wiedergeben.	(X28-1770) VR1(L) VR2(R)	Signale von 1kHz und 10kHz abwechselnd aufnehmen und die Regelwiderstände, die den Vormagnetisierugsstrom regeln, so justieren, daß der gleiche Wiedergabepegel erzielt wird.	(d)
<3>	UFNAHMEPEGEL	(A) 1kHz. -10dBs	(B)	Ein 1kHz Signal unter den in Punkt <2> beschriebenen Bedingungen aufnehmen und reproduzieren.	(X87-1050) VR1	Die Regelwiderstände so justieren, daß ein wiedergabepegel von -9dBs erzielt wird.	(e)

KX-65CW KX-65CW

PC BOARD

RECORD/PLAYBACK UNIT

DOLBY NR UNIT

PLAYBACK AMP UNIT

X28-1770-11

IC1

1	0 V
2	12.3V
3	0 V
4	12.3V
5	0 V
6	0 V
7	8.4V
8	0 V
9	0 V

IC2

1	0.8V
2	0.8V
3	1.5V
4	14.2V
5	0V
6	0V
7	1.4V
8	0V
9	1.9V

IC3

IN	30.5V
GND	—
OUT	15.0V

IC4

1	0V	10	2.7V
2	0V	11	10.9
3	0V	12	12.5V
4	12.5V	13	10.9V
5	12.5V	14	12.5V
6	10.9V	15	12.5V
7	12.5V	16	0V
8	10.9V	17	0V
9	0V	18	2.1V

X87-1100-02

IC1

1	10.5V	9	2.9V
2	2.4V	10	—
3	A 0V	11	2.9V
4	2.4V	12	2.9V
5	2.9V	13	2.9V
6	2.9V	14	2.4V
7	2.8V	15	120μ 0.2V
8	0V	16	2.4V

IC5

1	18.0V	8	17.2V
2	18.0V	9	18.0V
3	0V	10	0V
4	0V	11	0V
5	0V	12	0V
6	0V	13	0V
7	0V	14	18.0V

Q11

E	3.6V
B	4.2V
C	6.9V

Q12

E	3.6V
B	4.2V
C	6.9V

Q15

E	11.1V
B	11.8V
C	18.0V

Q16

E	11.1V
B	11.8V
C	18.0V

Q29

E	13.5V
B	14.2V
C	18.0V

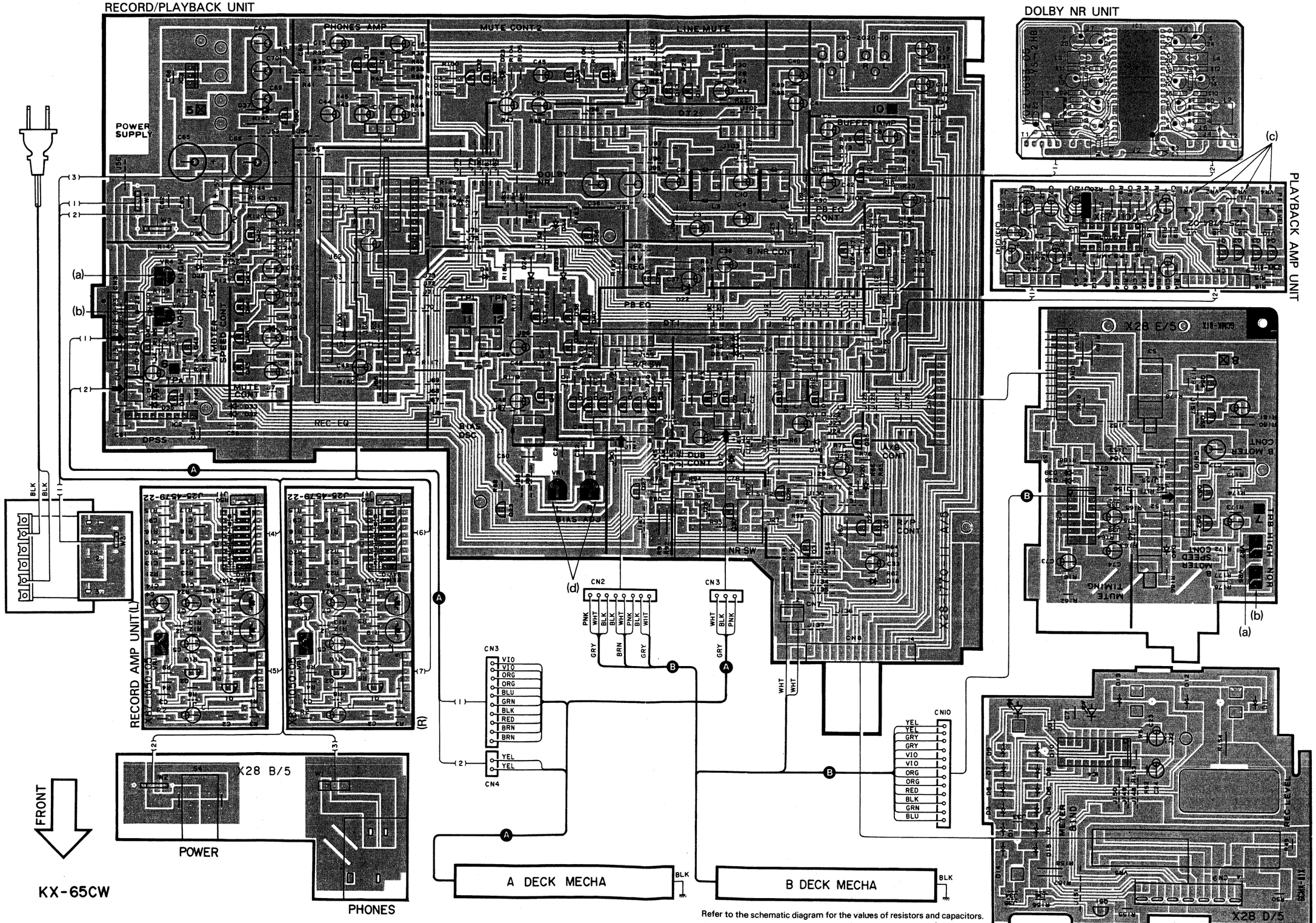
Q50

E	14.2V
B	14.9V
C	14.9V

X87-1050-05

Q2

E	1.1V
B	1.7V
C	8.6V



Refer to the schematic diagram for the values of resistors and capacitors.
The PC board drawing is viewing from the side easy to check.

(MECHA ASSY B)

(MECHA ASSY A)

(X28-1770-11) (A/5)

(X28-1770-11) (D/5)

(X28-1770-11) (B/5)

(X28-1770-11) (C/5)

(X28-1770-11) (E/5)

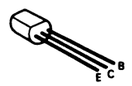
(X,T,E)TYPE

(U,M,UE)TYPE

(K,P)TYPE

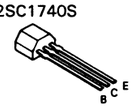
IC1 : TD6255
IC2 : AN6263
IC3 : μPC78L
IC4 : AN6888
IC5 : μPD40

2SA733(A)
2SA992
2SC1685
2SC1845
2SC1980
2SC2320
2SC945(A)
2SD1302
2SD863

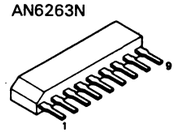


2SD612K
2SD882

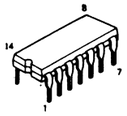
2SA933S
2SC1740S



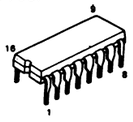
AN6263N



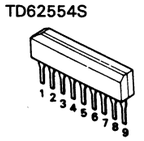
UPD4030BC



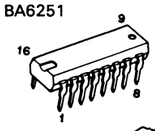
TA7705P



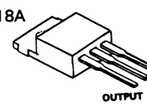
TD62554S



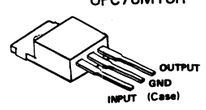
BA6251



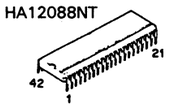
NJM78M18A



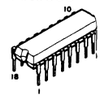
UPC78M18H

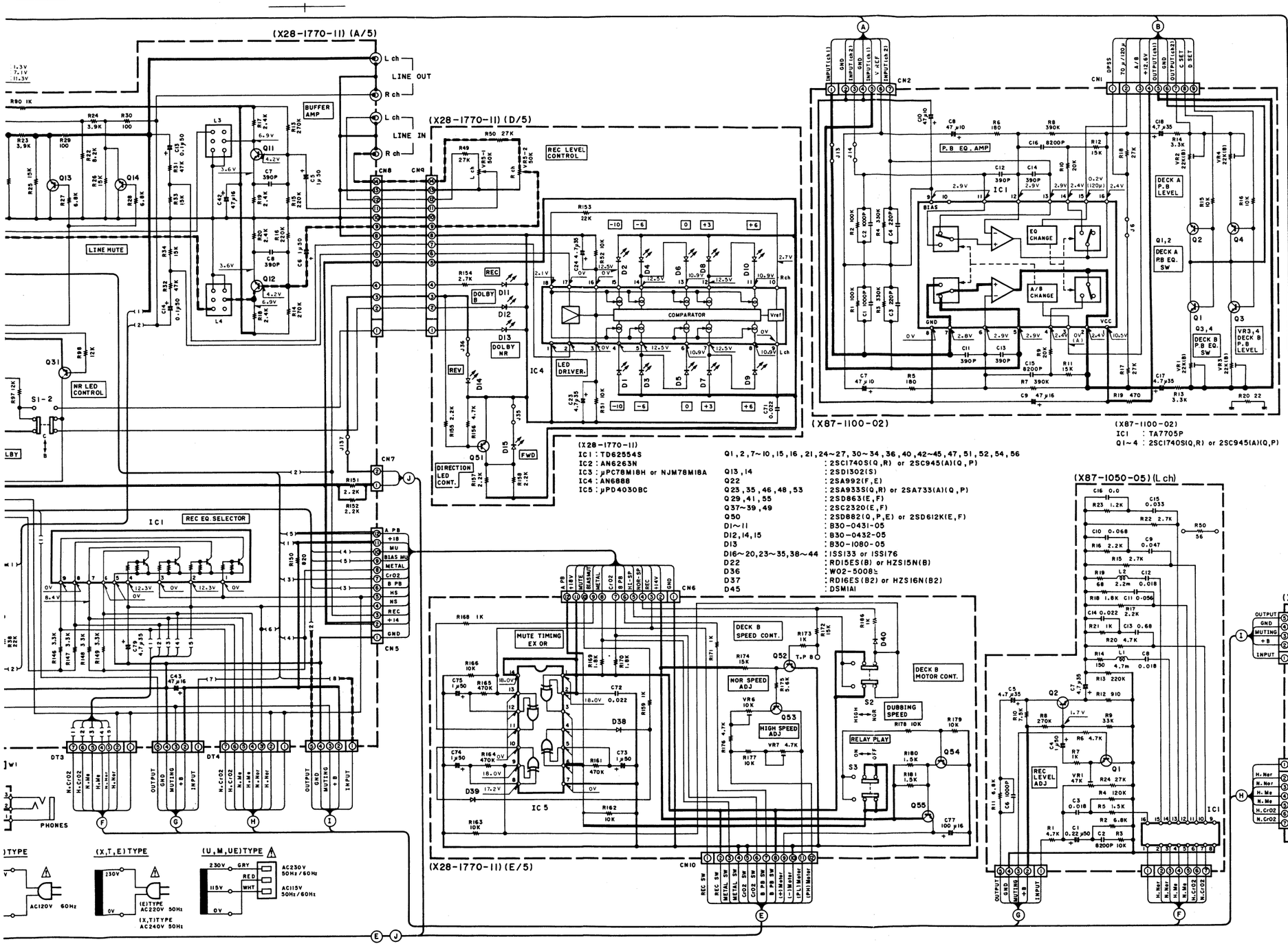


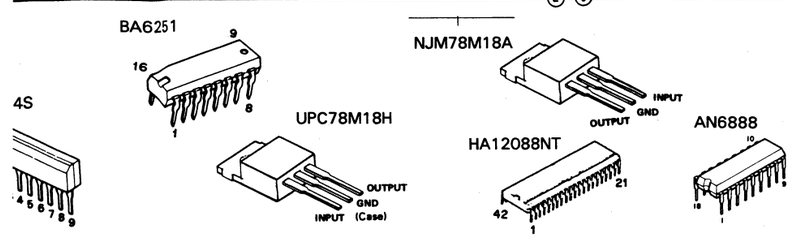
HA12088NT



AN6888







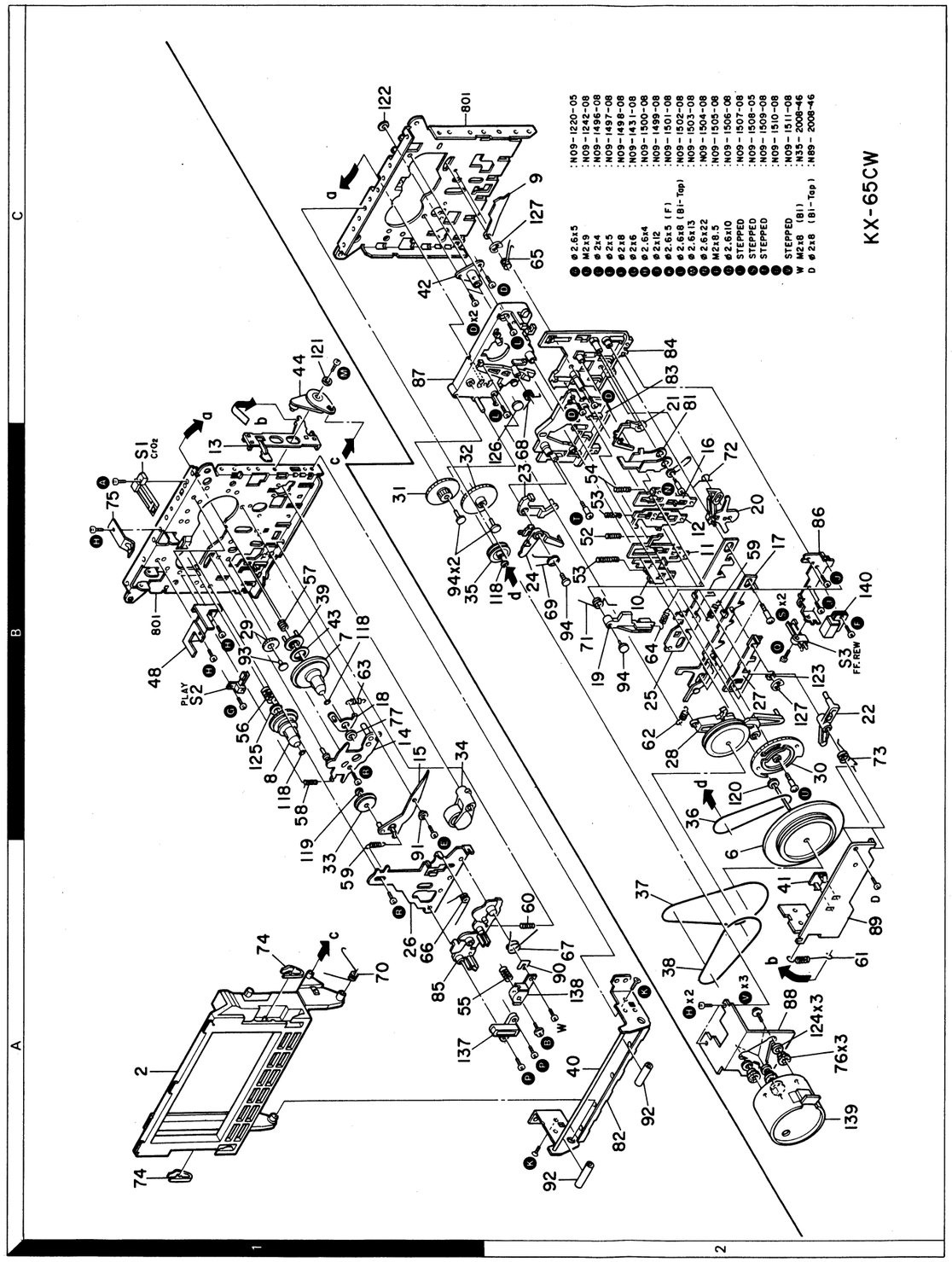
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

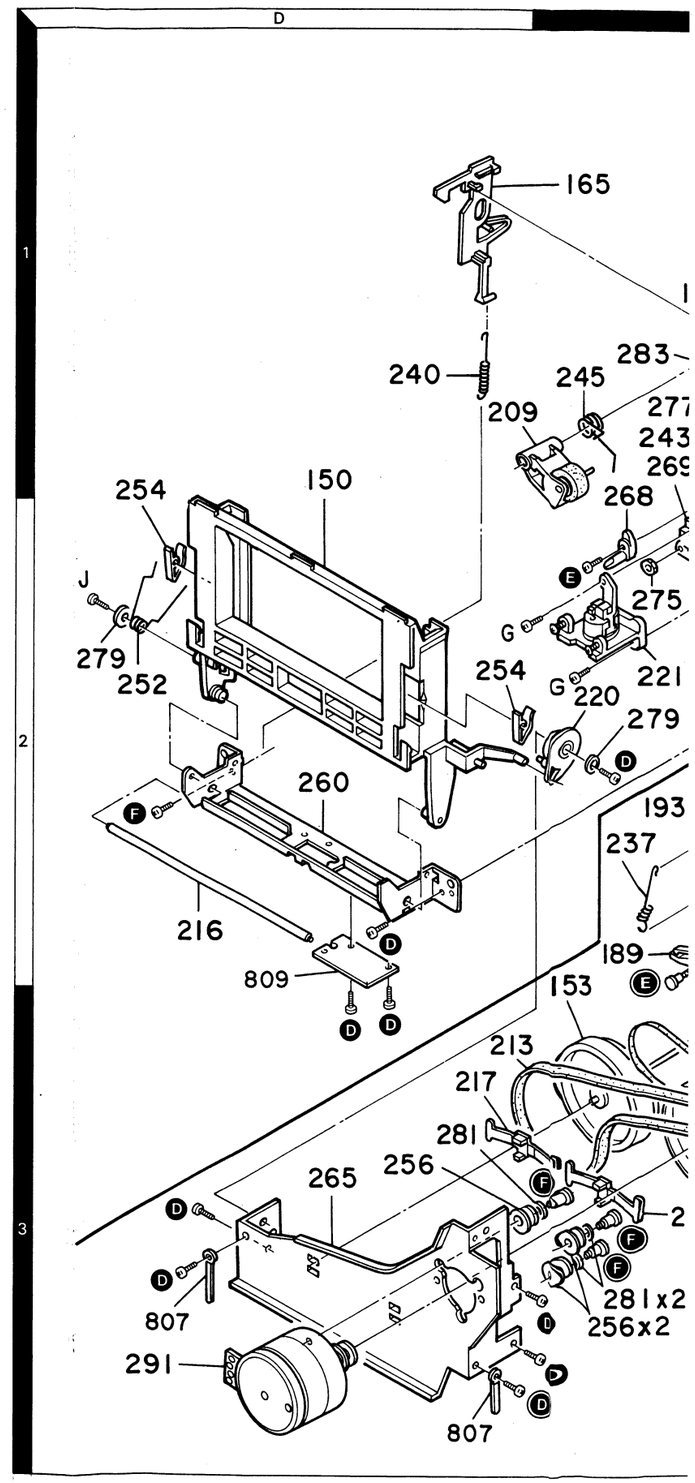
- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
- Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.
- Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

KX-65CW

KENWOOD

EXPLODED VIEW (MECHANISM A)

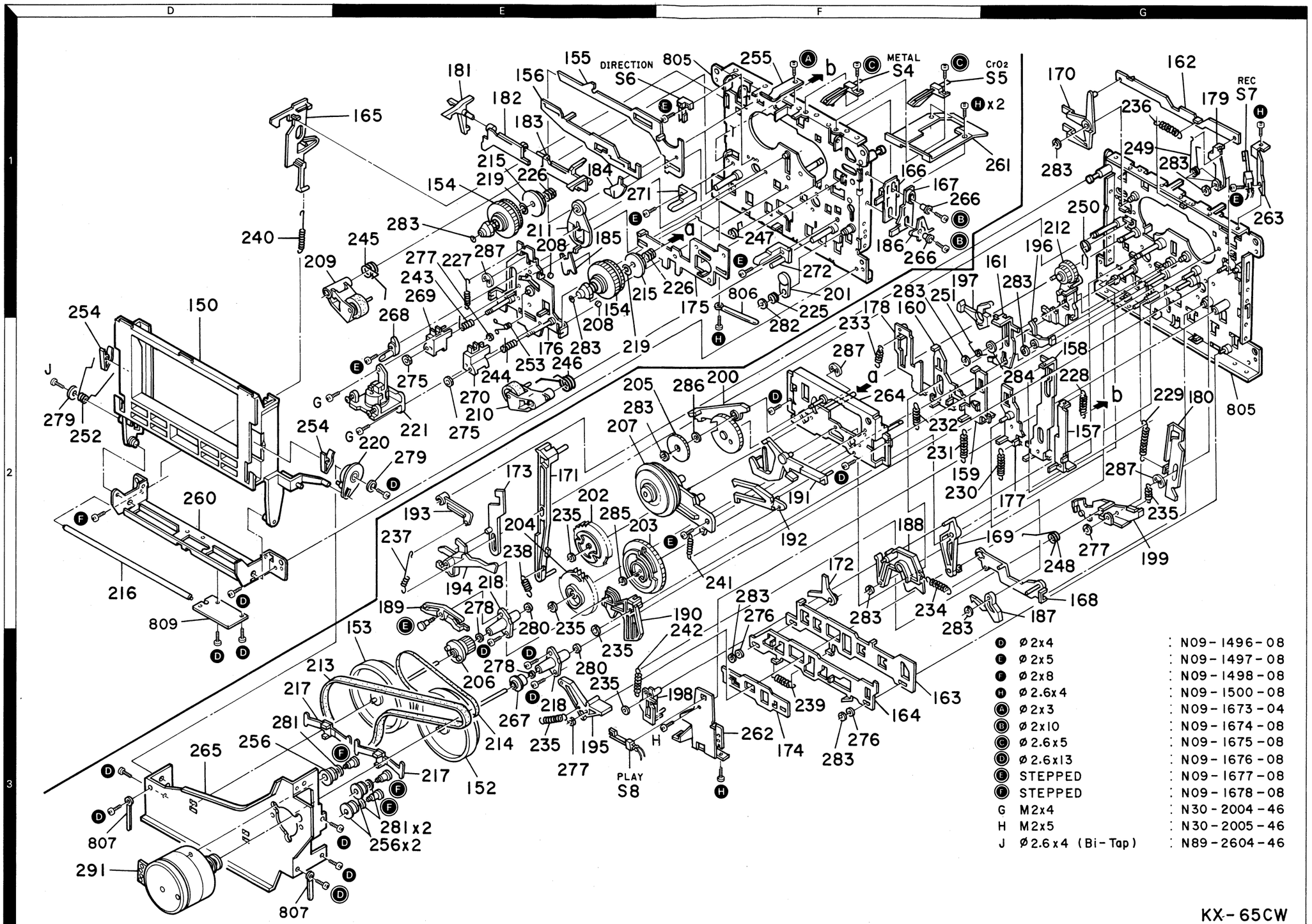




Parts with the exploded numbers larger than 700 are not supplied.

KX-65CW KX-65CW

EXPLODED VIEW (MECHANISM B)

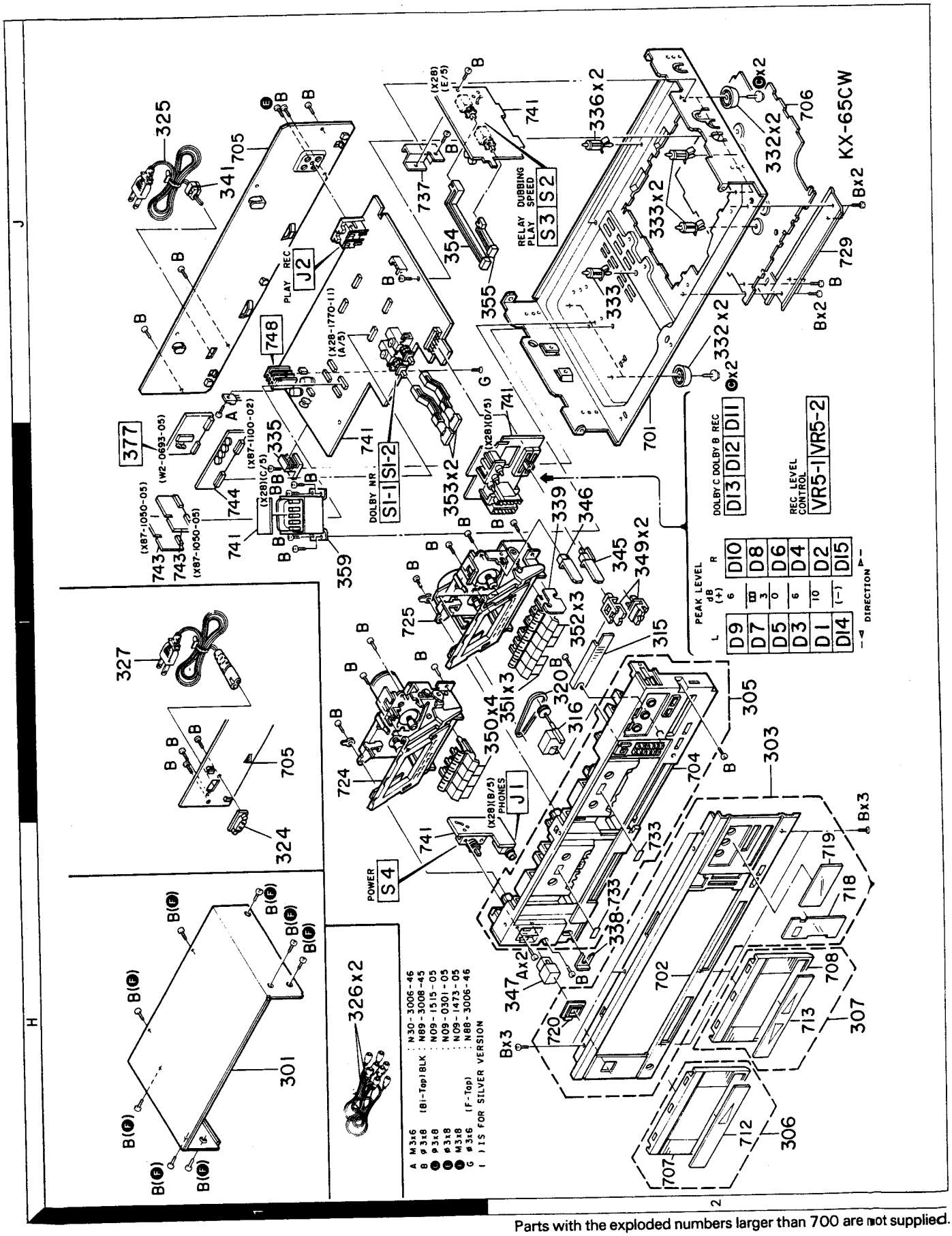


D	Ø2x4	: N09-1496-08
E	Ø2x5	: N09-1497-08
F	Ø2x8	: N09-1498-08
H	Ø2.6x4	: N09-1500-08
A	Ø2x3	: N09-1673-04
B	Ø2x10	: N09-1674-08
C	Ø2.6x5	: N09-1675-08
D	Ø2.6x13	: N09-1676-08
E	STEPPED	: N09-1677-08
F	STEPPED	: N09-1678-08
G	M2x4	: N30-2004-46
H	M2x5	: N30-2005-46
J	Ø2.6x4 (Bi-Tap)	: N89-2604-46

KX-65CW

Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW(UNIT)



Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

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			KX-65CW			
301	1H		A01-1407-01	METALLIC CABINET		S
301	1H		A01-1489-01	METALLIC CABINET		B
303	2I	*	A20-4824-02	PANEL ASSY	KPUM	B
303	2I	*	A20-4824-02	PANEL ASSY	UEXEA	B
303	2I	*	A20-4825-02	PANEL ASSY	T	B
303	2I	*	A20-4826-02	PANEL ASSY		S
305	2I		A22-0561-02	SUB PANEL ASSY		
306	2H		A53-0817-03	CASSETTE LID ASSY(A) GRAY	KPUM	B
306	2H		A53-0817-03	CASSETTE LID ASSY(A) GRAY	UEXA	B
306	2H	*	A53-0819-03	CASSETTE LID ASSY(A)		S
306	2H	*	A53-0821-03	CASSETTE LID ASSY(A)	TE	B
307	2H	*	A53-0818-03	CASSETTE LID ASSY(B) GRAY	KPUM	B
307	2H	*	A53-0818-03	CASSETTE LID ASSY(B) GRAY	UEXA	B
307	2H	*	A53-0820-03	CASSETTE LID ASSY(B)		S
307	2H	*	A53-0822-03	CASSETTE LID ASSY(B)	TE	B
315	2I	*	B07-1459-04	ESCUTCHEON (SLIDE)		
316	2I	*	B35-0036-05	TAPE COUNTER		
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0094-03	WARRANTY CARD	UUE	
-			B46-0095-03	WARRANTY CARD	UUE	
-			B46-0096-13	WARRANTY CARD	X	
-			B46-0121-03	WARRANTY CARD	P	
-			B46-0122-13	WARRANTY CARD	EE1	
-			B46-0123-03	WARRANTY CARD	T	
-		*	B50-6167-10	INSTRUCTION MANUAL(ENGLISH)	KPUMUE	
-		*	B50-6167-10	INSTRUCTION MANUAL(ENGLISH)	XEM1E1	
-		*	B50-6168-10	INSTRUCTION MANUAL(FRENCH)	EM1	
-		*	B50-6168-10	INSTRUCTION MANUAL(FRENCH)	E1AA1	
-		*	B50-6169-10	INSTRUCTION MANUAL(SPANISH)	MM1AA1	
-		*	B50-6170-10	INSTRUCTION MANUAL(ARABIC)	MM1AA1	
-		*	B50-6171-10	INSTRUCTION MANUAL(ENGLISH)	T	
-		*	B50-6172-10	INSTRUCTION MANUAL(G,D,I)	EE1	
-			B58-0223-04	CAUTION CARD (PRE-SET 120V)	U	
-			B58-0269-04	CAUTION CARD	K	
-			B58-0513-04	CAUTION CARD (PRESET220-240)	UE	
-			B59-0092-00	SERVICE DIRECTORY	UUE	
320	2I	*	D16-0133-04	BELT		
324	1H		E03-0102-25	AC INLET	UMUE	
324	1H		E03-0102-25	AC INLET	M1AA1	
325	1J		E30-0181-05	AC POWER CORD	KP	
325	1J		E30-0459-05	AC POWER CORD	EE1	
325	1J		E30-1341-05	AC POWER CORD	X	
325	1J		E30-1416-05	AC POWER CORD	T	
326	1H		E30-0505-05	AUDIO CORD		
327	1I		E30-1305-15	AC POWER CORD (INLET)	UMUEM1	
327	1I		E30-1329-05	AC POWER CORD (INLET)	AA1	
-		*	H01-7113-04	ITEM CARTON CASE	KPUM	
-		*	H01-7113-04	ITEM CARTON CASE	UEXEA	
-		*	H01-7114-04	ITEM CARTON CASE	T	
-		*	H01-7254-04	ITEM CARTON CASE		S
-			H10-1879-02	POLYSTYRENE FOAMED FIXTURE(L)		

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-		*	H10-1880-02	POLYSTYRENE FOAMED FIXTURE(R)		
-			H20-0417-04	PROTECTION COVER(460X370X360)	MM1AA1	
-			H25-0223-04	PROTECTION BAG (750X350)	KPUUE	
-			H25-0223-04	PROTECTION BAG (750X350)	XTEE1	
-			H25-0232-04	PROTECTION BAG (235X350)		
332	2J		J02-0170-04	FOOT		
333	2J		J19-0508-05	UNIT HOLDER		
335	1I	*	J19-2535-04	UNIT HOLDER (RED)	PUMUEX	
335	1I	*	J19-2535-04	UNIT HOLDER (RED)	TEM1E1	
335	1I	*	J19-2535-04	UNIT HOLDER	AA1	
335	1I	*	J19-2539-04	UNIT HOLDER (WHITE)	K	
336	2J		J19-2536-05	UNIT HOLDER		
338	2H		J21-3326-05	JACK MOUNTING HARDWARE(PHONES)		
339	2I	*	J30-0217-04	SPACER		
341	1J		J42-0083-05	POWER CORD BUSHING	KPX	
341	1J		J42-0083-05	POWER CORD BUSHING	TEE1	
-			J61-0307-05	WIRE BAND		
345	2I	*	K27-1640-04	KNOB (BUTTON) DIRECTION		
346	2I	*	K27-1642-04	KNOB (BUTTON) REVERSE MODE		
347	2H		K29-1446-04	KNOB ASSY (POWER)		S
347	2H		K29-2001-04	KNOB ASSY (POWER)		B
349	2I		K29-2379-04	KNOB (SLIDE) REC LEVEL CONTROL		
350	2I	*	K29-2381-03	KNOB (BUTTON) A		
351	2I	*	K29-2382-03	KNOB (BUTTON) B,LEFT		
352	2I	*	K29-2383-03	KNOB (BUTTON) B,RIGHT		
353	1I	*	K29-2465-04	KNOB ASSY (DOLBY NR)		
354	1J	*	K29-2466-04	KNOB ASSY (RELAY PLAY)		
355	2J	*	K29-2467-04	KNOB ASSY (DUBBING SPEED)		
359	1I	*	L01-7251-05	POWER TRANSFORMER	KP	
359	1I	*	L01-7252-05	POWER TRANSFORMER	XTEE1	
359	1I	*	L01-7254-15	POWER TRANSFORMER	UMUE	
359	1I	*	L01-7254-15	POWER TRANSFORMER	M1AA1	
C	2J		N09-1515-05	TAPPING SCREW (Ø3X8)		
E	1J		N09-0301-05	TAPTITE SCREW (Ø3X8)		
F	1H		N09-1473-05	TAPPING SCREW (M3X8)		S
D1 -11	2I		B30-0431-05	LED(LN21CPH) PEAK LEVEL		
D12	2I		B30-0432-05	LED(LN31GCPH(U))DOLBY B		
D13	2I		B30-1080-05	LED DOLBY C		
D14 ,15	2I		B30-0432-05	LED(LN31GCPH(U))DIRECTION		
C1 ,2			CK45FB1H681K	CERAMIC 680PF K		
C3 ,4			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C5 ,6			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C7 ,8			CK45FB1H391K	CERAMIC 390PF K		
C9 -12			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C13 ,14			CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C15 ,16			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C17 ,18			CE04KW1C330M	ELECTRO 33UF 16WV		
C19 ,20			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C21 ,22			CC45FSL1H101J	CERAMIC 100PF J		
C23 ,24			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C25 ,26			CK45FB1H102K	CERAMIC 1000PF K		
C31			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		

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RECORD/PLAYBACK UNIT (X28-1770-11)						
C32			CE04KW1A470M	ELECTRO 47UF 10WV		
C33 -35			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C36			CE04KW1V100M	ELECTRO 10UF 35WV		
C37			CE04KW1C330M	ELECTRO 33UF 16WV		
C38			CE04KW1C331M	ELECTRO 330UF 16WV		
C39			CE04KW1A471M	ELECTRO 470UF 10WV		
C40			CE04KW1C220M	ELECTRO 22UF 16WV		
C41			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C42 ,43			CE04KW1C470M	ELECTRO 47UF 16WV		
C44			CE04KW1C330M	ELECTRO 33UF 16WV		
C45			CE04KW1V100M	ELECTRO 10UF 35WV		
C46			CF92FV1H123J	MF 0.012UF J		
C47			CF92FV1H682J	MF 6800PF J		
C48 ,49			CE04KW1V100M	ELECTRO 10UF 35WV		
C50			C91-0776-05	POLYPRO 1800PF J		
C51			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C52			CE04KW1E101M	ELECTRO 100UF 25WV		
C53			CE04KW1V100M	ELECTRO 10UF 35WV		
C54			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C55			CE04KW1E101M	ELECTRO 100UF 25WV		
C58			CK45FB1H821K	CERAMIC 820PF K		
C59			CF92FV1H223J	MF 0.022UF J		
C60			CK45FB1H102K	CERAMIC 1000PF K		
C61			CF92FV1H104J	MF 0.10UF J		
C62 ,63			CK45FF1H103Z	CERAMIC 0.010UF Z		
C65			CE04KW1V102M	ELECTRO 1000UF 35WV		
C67			CE04KW1E101M	ELECTRO 100UF 25WV		
C68		*	CE04KW1E102M*	ELECTRO 1000UF 25WV		
C69 ,70			CE04KW1C101M	ELECTRO 100UF 16WV		
C71 ,72			CK45FF1H223Z	CERAMIC 0.022UF Z		
C73 -75			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C77			CE04KW1C101M	ELECTRO 100UF 16WV		
C79			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
J1	2I		E11-0162-05	PHONE JACK (3P)		
J2	1J		E13-0446-05	PHONO JACK (4P)LINE OUT/IN		
L1 ,2			L39-0126-05	TRAP COIL		
L3 ,4			L79-0720-05	LC FILTER		
L5 ,6			L39-0126-05	TRAP COIL		
L7			L32-0325-05	OSCILATING COIL		
R41 ,42			RS14KB3A561J	FL-PROOF RS 560 J 1W		
R115			RS14KB3A221J	FL-PROOF RS 220 J 1W		
R116			RS14KB3A151J	FL-PROOF RS 150 J 1W		
R117			RS14KB3A270J	FL-PROOF RS 27 J 1W		
R119			RD14GB2E4R7J	FL-PROOF RD 4.7 J 1/4W		
R145			RD14GB2E121J	FL-PROOF RD 120 J 1/4W		
VR1 ,2			R12-5047-05	TRIMMING POT.(220K)BIAS ADJ		
VR3			R12-3096-05	TRIMMING POT.(10K)NOR SPEED		
VR4			R12-1069-05	TRIMMING POT.(4.7K)HIGH SPEED		
VR5	2I		R13-4036-05	POTENTIOMETER(REC LEVEL CONT.)		
VR6			R12-3100-05	TRIMMING POT.(10K)NOR SPEED		
VR7			R12-1073-05	TRIMMING POT.(4.7K)HIGH SPEED		
S1	2I		S42-2103-05	MULTIPLE PUSH SWITCH(DOLBY NR)		
S2 ,3	2J		S40-2193-05	PUSH SWITCH(TWO SPEED DUBBING)		

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S4	1H		S40-2182-15	PUSH SWITCH (POWER)		
D16 -21			1SS133	DIODE		
D16 -21			1SS176	DIODE		
D22		*	HZS15N(B)	ZENER DIODE		
D22			RD15ES(B)	ZENER DIODE		
D23 -35			1SS133	DIODE		
D23 -35			1SS176	DIODE		
D36			W02-5008L	DIODE		
D37			HZS16N(B2)	ZENER DIODE		
D37			RD16ES(B2)	ZENER DIODE		
D38 -44			1SS133	DIODE		
D38 -44			1SS176	DIODE		
D45			DSM1A1	DIODE		
IC1			TD62554S	IC(4CH TRANSISTOR ARRAY)		
IC2			AN6263N	IC(DPSS BLANK DETECT)		
IC3			NJM78M18A	IC(VOLTAGE REGULATOR/ +18V)		
IC3			UPC78M18H	IC(VOLTAGE REGULATOR/ +18V)		
IC4			AN6888	IC(5PT LED LEVEL METER DR X2)		
IC5			UPD4030BC	IC(EXCLUSIVE OR X4)		
Q1 ,2			2SC1740S(Q,R)	TRANSISTOR		
Q1 ,2			2SC945(A)(Q,P)	TRANSISTOR		
Q3 -6			2SC1845(F,E)	TRANSISTOR		
Q7 -10			2SC1740S(Q,R)	TRANSISTOR		
Q7 -10			2SC945(A)(Q,P)	TRANSISTOR		
Q11 ,12			2SC1845(F,E)	TRANSISTOR		
Q13 ,14			2SD1302(S)	TRANSISTOR		
Q15 ,16			2SC1740S(Q,R)	TRANSISTOR		
Q15 ,16			2SC945(A)(Q,P)	TRANSISTOR		
Q21			2SC1740S(Q,R)	TRANSISTOR		
Q21			2SC945(A)(Q,P)	TRANSISTOR		
Q22			2SA992(F,E)	TRANSISTOR		
Q23			2SA733(A)(Q,P)	TRANSISTOR		
Q23			2SA933S(Q,R)	TRANSISTOR		
Q24 -27			2SC1740S(Q,R)	TRANSISTOR		
Q24 -27			2SC945(A)(Q,P)	TRANSISTOR		
Q29			2SD863(E,F)	TRANSISTOR		
Q30 -34			2SC1740S(Q,R)	TRANSISTOR		
Q30 -34			2SC945(A)(Q,P)	TRANSISTOR		
Q35			2SA733(A)(Q,P)	TRANSISTOR		
Q35			2SA933S(Q,R)	TRANSISTOR		
Q36			2SC1740S(Q,R)	TRANSISTOR		
Q36			2SC945(A)(Q,P)	TRANSISTOR		
Q37 -39			2SC2320(E,F)	TRANSISTOR		
Q40			2SC1740S(Q,R)	TRANSISTOR		
Q40			2SC945(A)(Q,P)	TRANSISTOR		
Q41			2SD863(E,F)	TRANSISTOR		
Q42 -45			2SC1740S(Q,R)	TRANSISTOR		
Q42 -45			2SC945(A)(Q,P)	TRANSISTOR		
Q46			2SA733(A)(Q,P)	TRANSISTOR		
Q46			2SA933S(Q,R)	TRANSISTOR		
Q47			2SC1740S(Q,R)	TRANSISTOR		
Q47			2SC945(A)(Q,P)	TRANSISTOR		
Q48			2SA733(A)(Q,P)	TRANSISTOR		
Q48			2SA933S(Q,R)	TRANSISTOR		

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Q49			2SC2320(E,F)	TRANSISTOR		
Q50			2SD612K(E,F)	TRANSISTOR		
Q50			2SD882(Q,P,E)	TRANSISTOR		
Q51 ,52			2SC1740S(Q,R)	TRANSISTOR		
Q51 ,52			2SC945(A)(Q,P)	TRANSISTOR		
Q53			2SA733(A)(Q,P)	TRANSISTOR		
Q53			2SA933S(Q,R)	TRANSISTOR		
Q54			2SC1740S(Q,R)	TRANSISTOR		
Q54			2SC945(A)(Q,P)	TRANSISTOR		
Q55			2SD863(E,F)	TRANSISTOR		
Q56			2SC1740S(Q,R)	TRANSISTOR		
Q56			2SC945(A)(Q,P)	TRANSISTOR		
377	1I		W02-0693-05	ELECTRIC CIRCUIT MODULE		
RECORD UNIT (X87-1050-05)						
C1			CE04FW1HR22M	ELECTRO 0.22UF 50WV		
C2			CF92FV1H822J	MF 8200PF J		
C3			CF92FV1H183J	MF 0.018UF J		
C4			CE04FW1H010M	ELECTRO 1.0UF 50WV		
C5			CE04FW1V4R7M	ELECTRO 4.7UF 35WV		
C6			CF92FV1H102J	MF 1000PF J		
C7			CE04FW1V4R7M	ELECTRO 4.7UF 35WV		
C8			CF92FV1H183J	MF 0.018UF J		
C9			CF92FV1H473J	MF 0.047UF J		
C10			CF92FV1H683J	MF 0.068UF J		
C11			CF92FV1H563J	MF 0.056UF J		
C12			CF92FV1H183J	MF 0.018UF J		
C13			CF92FV1H683J	MF 0.068UF J		
C14			CF92FV1H223J	MF 0.022UF J		
C15			CF92FV1H333J	MF 0.033UF J		
C16			CF92FV1H103J	MF 0.010UF J		
L1			L40-4725-29	SMALL FIXED INDUCTOR(4.7MH,J)		
L2			L40-2225-29	SMALL FIXED INDUCTOR(2.2MH,J)		
VR1			R12-3103-05	TRIMMING POT.(47K)REC LVL ADJ		
IC1			BA6251	IC(7CH TRANSISTOR ARRAY)		
Q1			2SC1685(R,S)	TRANSISTOR		
Q1			2SC1740S(Q,R)	TRANSISTOR		
Q2			2SC1845(F,E)	TRANSISTOR		
Q2			2SC1980(S,T)	TRANSISTOR		
PLAYBACK UNIT (X87-1100-02)						
C1 ,2			CK45FB1H102K	CERAMIC 1000PF K		
C3 ,4			CC45FSL1H221J	CERAMIC 220PF J		
C7 ,8			CE04KW1A470M	ELECTRO 47UF 10WV		
C9			CE04KW1C470M	ELECTRO 47UF 16WV		
C10			CE04KW1A470M	ELECTRO 47UF 10WV		
C11 -14			CK45FB1H391K	CERAMIC 390PF K		
C15 ,16			CF92FV1H822J	MF 8200PF J		
C17 ,18			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
VR1 -4			R12-3101-05	TRIMMING POT.(22K)PB LEVEL		
IC1			TA7705P	IC(PB EQ AMP/FWD REV SWITCH)		
Q1 -4			2SC1740S(Q,R)	TRANSISTOR		
Q1 -4			2SC945(A)(Q,P)	TRANSISTOR		

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MECHANISM ASS'Y (D40-0366-05): A						
2	1A		A53-0753-08	CASSETTE HOLDER		
6	2A		D01-0071-08	FLYWHEEL ASSY (S)		
7	1B		D03-0239-08	REEL DISK ASSY		
8	1B		D03-0240-08	REEL DISK ASSY		
9	2C		D10-1475-08	LEVER (REC,BH)		
10	2B		D10-1482-08	LEVER (STOP)		
11	2B		D10-1483-08	LEVER (FF,H)		
12	2B		D10-1484-08	LEVER (REW,H)		
13	1B		D10-1486-08	LEVER (EJECT)		
14	1B		D10-1487-08	LEVER ASSY (SIFT ARM)		
15	1B		D10-1488-08	LEVER ASSY (IDLER ARM,HT)		
16	2B		D10-1489-08	LEVER ASSY (PLAY,S)		
17	2B		D10-1490-08	LEVER ASSY (LOCK CAM,BS)		
18	1B		D10-1491-08	LEVER ASSY (RC LOCK ARM,N)		
19	2B		D10-1493-08	LEVER ASSY (SOLENOID ARM)		
20	2B		D10-1494-08	ARM (RC)		
21	2C		D10-1495-08	ARM (TRIGGER)		
22	2B		D10-1496-08	ARM (H)		
23	2B		D10-1497-08	ARM (AUTO,B)		
24	2B		D10-1498-08	ARM (AUTO LOCK)		
25	2B		D10-1499-08	SLIDER (LOCK CAM,C)		
26	1A		D10-1500-08	SLIDER (HEAD SHASSIS)		
27	2B		D10-1501-08	SLIDER (LOCK CAM,S)		
28	2B		D10-1760-08	LEVER ASSY (CLUTCH ARM)		
29	1B		D13-0283-08	GEAR (FF)		
30	2B		D13-0284-08	GEAR (C)		
31	1B		D13-0285-08	GEAR (AUTO)		
32	1B		D13-0286-08	GEAR (AUTO CAM)		
33	1A		D14-0126-08	IDLER (PLAY)		
34	1B		D14-0127-08	PINCH ROLLER ASSY		
35	1B		D15-0237-08	PULLEY (AUTO)		
36	2B		D16-0121-08	BELT (AUTO)		
37	2A		D16-0143-08	BELT (DRIVE)		
38	2A		D16-0144-08	BELT (FR)		
39	1B		D19-0077-08	CLUTCH (AUTO)		
40	2A		D21-1100-08	EXTENSION SHAFT(BUTTON,TR)		
41	2A		D23-0204-08	RETAINER (CAPSTAN SPACER		
42	1C		D23-0205-08	RETAINER (HOUSING ASSY)		
43	1B		D33-0018-08	LINING (AUTO CLUTCH FELT		
44	1C		D39-0175-08	DAMPER ASSY		
48	1B		F07-0471-08	COVER (SW PROTECTOR)		
52	2B		G01-1686-08	COMPRESSION SPRING(FF LEVER)		
53	2B		G01-1687-08	COMPRESSION SPRING(REW LEVER)		
54	2B		G01-1688-08	COMPRESSION SPRING(LEVER)		
55	1A		G01-1689-08	COMPRESSION SPRING(HEAD)		
56	1B		G01-1690-08	COMPRESSION SP (BACK TENSION		
57	1B		G01-1691-08	COMPRESSION SPRING(AUTO CLUTCH		
58	1B		G01-1692-08	TENSION SPRING (SHIFT ARM,C)		
59	1A,2B		G01-1693-08	TENSION SPRING (CAM)		
60	2A		G01-1694-08	TENSION SP(HEAD SHASSIS RETURN		
61	2A		G01-1695-08	TENSION SPRING (EJECT LEVER)		

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62	2B		G01-1696-08	TENSION SPRING (CLUTCH ARM)		
63	1B		G01-1697-08	TENSION SPRING (RC LOCK ARM)		
64	2B		G01-1698-08	TENSION SPRING (SOLENOID ARM,H		
65	2C		G01-1699-08	TORSION SPRING (REC LEVER,B)		
66	1A		G01-1700-08	TORSION SPRING (HEAD SHASSIS)		
67	2A		G01-1701-08	TORSION SPRING (P ROLLER,S)		
68	2B		G01-1703-08	TORSION SPRING (AUTO SENSOR)		
69	2B		G01-1704-08	TORSION SPRING (AUTO LOCK ARM)		
70	1A		G01-1705-08	TORSION SPRING (CASET CASE)		
71	2B		G01-1706-08	TORSION SPRING (TRIGGER ARM)		
72	2B		G01-1707-08	TORSION SPRING (RC ARM)		
73	2B		G01-1913-08	TORSION SPRING (LOCK ARM)		
74	1A	*	G02-0194-08	FLAT SPRING (CASSETE CLAMP)		
75	1B		G02-0425-08	FLAT SPRING (PACK)		
76	2A		G11-1120-08	CUSHION (MOTOR)		
77	1B		G16-0139-08	SHEET (RC LOCK ARM)		
81	2C		J19-2543-08	HOLDER (TRIGGER)		
82	2A		J19-2544-08	HOLDER (BUTTON,TR)		
83	2C		J19-2545-08	HOLDER (LEVER,A)		
84	2C		J19-2546-08	HOLDER (LEVER,B)		
85	1A		J19-2547-08	HOLDER (HEAD BASE)		
86	2B		J19-2548-08	BRACKET ASSY (SOLENOID)		
87	1C		J19-2549-08	HOLDER (REEL BASE,B)		
88	2A		J21-3896-08	MOUNTING HARDWARE(MOTOR)		
89	2A		J21-3897-08	MOUNTING HARDWARE(FLYWHEEL)		
90	2A		J30-0202-05	SPACER (HEAD)		
91	1A		J31-0251-08	COLLAR		
92	2A		J31-0252-08	COLLAR (BUTTON)		
93	1B		J42-0132-08	BUSHING		
94	1B,2B		J42-0133-08	BUSHING		
-		*	J42-0307-05			
118	1B,2B		N19-0298-05	FLAT WASHER(Ø1.7XØ3.5XT0.25)		
119	1A		N19-0365-04	FLAT WASHER(Ø1.2XØ3.5XT0.25)		
120	2B		N19-0524-04	FLAT WASHER(Ø2.1XØ5.0XT0.25)		
121	1C		N19-0935-08	FLAT WASHER(Ø2.6)		
122	1C		N19-0937-08	FLAT WASHER(Ø1.9XØ5.0XT0.5)		
123	2B		N19-0938-08	FLAT WASHER(Ø3.1XØ6.0XT0.4)		
124	2A		N19-1029-05	FLAT WASHER		
125	1B		N19-1038-08	FLAT WASHER		
126	2B		N19-1039-08	FLAT WASHER		
127	2B,2C		N29-0206-08	E TYPE RETAINING RING(Ø2)		
A	1B		N09-1220-05	SCREW (Ø2.6X5)		
B	2A		N09-1242-08	SCREW (M2X9)		
D	1C,2C		N09-1496-08	SCREW (Ø2X4)		
E	1A		N09-1497-08	SCREW (Ø2X5)		
F	2B		N09-1498-08	SCREW (Ø2X8)		
G	1B		N09-1431-08	SCREW (Ø2X6)		
H	2A,1B		N09-1500-08	SCREW (Ø2.6X4)		
J	2B		N09-1499-08	SCREW (Ø2X12)		
K	2A		N09-1501-08	SCREW (Ø2.6X5)		
L	2C		N09-1502-08	SCREW (Ø2.6X8)		
M	1C		N09-1503-08	SCREW (Ø2.6X13)		
N	2B		N09-1504-08	SCREW (Ø2.6X22)		
P	2A		N09-1505-08	SCREW (M2X8.5)		

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Q	2B		N09-1506-08	SCREW (Ø2.6X10)		
R	1A,1B		N09-1507-08	SCREW (STEPPED)		
S	2B		N09-1508-08	SCREW (STEPPED)		
T	2B		N09-1509-08	SCREW (STEPPED)		
U	2B		N09-1510-08	SCREW		
V	2A		N09-1511-08	SCREW (STEPPED)		
S1	1B		S46-1061-08	LEAF SWITCH (CR02)		
S2	1B		S46-1062-08	LEAF SWITCH (PLAY)		
S3	2B		S46-1063-08	LEAF SWITCH (FF,REW)		
137	1A	*	T32-0308-05	ERASE HEAD (TAPE GUIDE)		
138	2A		T34-0317-08	REC/PLAY HEAD		
139	2A	*	T42-0404-08	DC MOTOR ASSY		
140	2B		T94-0087-08	SOLENOID		
MECHANISM ASS'Y (D40-0367-05): B						
150	1D	*	A53-0845-08	CASSETTE HOLDER		
152	3E	*	D01-0085-08	FLYWHEEL ASSY		
153	2E	*	D01-0086-08	FLYWHEEL ASSY		
154	1E	*	D03-0254-08	REEL DISK ASSY		
155	1E	*	D10-1692-08	LEVER (RV)		
156	1E	*	D10-1693-08	LEVER (REC STOPPER)B		
157	2G	*	D10-1694-08	LEVER (STOP)		
158	2G	*	D10-1695-08	LEVER (REC)		
159	2F	*	D10-1696-08	LEVER (REW)		
160	1F	*	D10-1697-08	LEVER (FF)		
161	1G	*	D10-1698-08	LEVER (AUTO CANCELLER		
162	1G	*	D10-1699-08	LEVER (REC STOPPER)A		
163	3F	*	D10-1700-08	LEVER (LOCK)		
164	3F	*	D10-1701-08	LEVER (LOCK)		
165	1E	*	D10-1702-08	LEVER (EJECT)		
166	1F	*	D10-1703-08	LEVER (MODE)		
167	1F	*	D10-1704-08	LEVER (DIRECTION)		
168	2G	*	D10-1705-08	LEVER (P MOVEMENT)A		
169	2G	*	D10-1706-08	LEVER (P MOVEMENT)B		
170	1G	*	D10-1707-08	LEVER (REC MOVEMENT)		
171	2E	*	D10-1708-08	LEVER (AUTO STOP)		
172	2F	*	D10-1709-08	LEVER (CAM CANCEL)		
173	2E	*	D10-1710-08	LEVER (MODE)		
174	3F	*	D10-1711-08	LEVER (INTER LOCK)		
175	1F	*	D10-1712-08	LEVER ASSY (RV)		
176	2E	*	D10-1713-08	LEVER ASSY (HEAD CHASSIS)		
177	2G	*	D10-1714-08	LEVER ASSY (PLAY)		
178	1F	*	D10-1715-08	LEVER ASSY (PAUSE)		
179	1G	*	D10-1716-08	ARM (REC MOVEMENT)		
180	2G	*	D10-1717-08	ARM (REC)		
181	1E	*	D10-1718-08	ARM (REC SENSOR L)		
182	1E	*	D10-1719-08	ARM (REC SENSOR M)		
183	1E	*	D10-1720-08	ARM (REC SENSOR R)		
184	1E	*	D10-1721-08	ARM (MODE)		
185	1E	*	D10-1722-08	ARM (IDLER)		
186	1F	*	D10-1723-08	ARM (DIRECTION STPR		
187	2G	*	D10-1724-08	ARM (PLAY)		
188	2F	*	D10-1725-08	ARM (GEAR LOCK)(FR)		
189	2E	*	D10-1726-08	ARM (FR)		

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190	2F	*	D10-1727-08	ARM (GEAR LOCK)(RV)		
191	2F	*	D10-1728-08	ARM (AUTO SENSOR)		
192	2F	*	D10-1729-08	ARM (AUTO BRAKE)		
193	2E	*	D10-1730-08	ARM (AS DIRECTION)		
194	2E	*	D10-1731-08	ARM (DIRECTION)		
195	3E	*	D10-1732-08	ARM (SHIFT)(FR)		
196	1G	*	D10-1733-08	ARM (BRAKE R)		
197	1F	*	D10-1734-08	ARM (BRAKE L)		
198	3F	*	D10-1735-08	ARM (GEAR LOCK)(P)		
199	2G	*	D10-1736-08	ARM ASSY (SHIFT)		
200	2F	*	D10-1737-08	ARM ASSY (AUTO CAM)		
201	1F		D12-0109-08	CAM		
202	2E	*	D13-0350-08	GEAR (RV CAM)		
203	2E	*	D13-0354-08	GEAR (P CAM)		
204	2E	*	D13-0355-08	GEAR (FR CAM)		
205	2E	*	D13-0356-08	GEAR (AUTO)		
206	3E	*	D13-0357-08	GEAR (FLYWHEEL)		
207	2E	*	D13-0358-08	GEAR ASSY (CLUTCH)		
208	1E	*	D14-0152-08	ROLLER (GUIDE)		
209	1D	*	D14-0153-08	PINCH ROLLER ASSY (L)		
210	2E	*	D14-0154-08	PINCH ROLLER ASSY (R)		
211	1E	*	D14-0155-08	IDLER ASSY (P)		
212	1G	*	D14-0156-08	IDLER ASSY (FR)		
213	3D	*	D16-0138-08	BELT		
214	3E	*	D16-0139-08	BELT		
215	1E	*	D19-0079-08	CLUTCH (AUTO)		
216	2D	*	D21-1145-08	EXTENSION SHAFT		
217	3D,3E	*	D23-0208-08	RETAINER		
218	2E,3E	*	D23-0209-08	RETAINER (HOUSING)		
219	1E		D33-0018-08	LINING		
220	2E		D39-0175-08	DAMPER ASSY		
221	2E	*	D40-0374-08	MECHANISM ASSY		
225	1F	*	G01-1861-08	COMPRESSION SPRING		
226	1E,1F	*	G01-1862-08	COMPRESSION SPRING		
227	1E	*	G01-1863-08	COMPRESSION SPRING		
228	2G	*	G01-1864-08	EXTENSION SPRING		
229	2G	*	G01-1865-08	EXTENSION SPRING		
230	2F	*	G01-1866-08	EXTENSION SPRING		
231	2F	*	G01-1867-08	EXTENSION SPRING		
232	2F	*	G01-1868-08	EXTENSION SPRING		
233	1F	*	G01-1869-08	EXTENSION SPRING		
234	2F	*	G01-1870-08	EXTENSION SPRING		
235	3E,2G	*	G01-1871-08	EXTENSION SPRING		
236	1G	*	G01-1872-08	EXTENSION SPRING		
237	2E	*	G01-1873-08	EXTENSION SPRING		
238	2E	*	G01-1874-08	EXTENSION SPRING		
239	3F	*	G01-1875-08	EXTENSION SPRING		
240	1D	*	G01-1876-08	EXTENSION SPRING		
241	2F	*	G01-1877-08	EXTENSION SPRING		
242	2F	*	G01-1878-08	EXTENSION SPRING		
243	1E	*	G01-1879-08	TORSION COIL SPRING		
244	2E	*	G01-1880-08	TROSION COIL SPRING		
245	1E	*	G01-1881-08	TORSION COIL SPRING(PR,L)		
246	2E	*	G01-1882-08	TORSION COIL SPRING(PR,R)		

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UE: AAFES(Europe) X: Australia M: Other Areas

S: SILVER VERSION
B: BLACK VERSION
⚠ indicates safety critical components.

PARTS LIST

* New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Telle ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
DOLBY NR UNIT (W02-0693-05)						
C1			CK45F1H103Z	CERAMIC 0.010UF Z		
C2			CS15E1C100M	TANTAL 10UF 16WV		
C3 ,4			CE04FW1H100M	ELECTRO 10UF 50WV		
C5 ,6			CQ92M1H103J	MYLAR 0.010UF J		
C7 ,8			CE04FW1H010M	ELECTRO 1.0UF 50WV		
C9 ,10			CQ92M1H183J	MYLAR 0.018UF J		
C11 ,12			CE04FW1HR68M	ELECTRO 0.68UF 50WV		
C13 ,14			CE04FW1H2R2M	ELECTRO 2.2UF 50WV		
C15 ,16			CQ92M1H183J	MYLAR 0.018UF J		
C17 ,18			CQ92M1H103J	MYLAR 0.010UF J		
C19 ,20			CQ92M1H823J	MYLAR 0.082UF J		
C21 ,22			CE04FW1HR68M	ELECTRO 0.68UF 50WV		
C23 ,24			CE04FW1H2R2M	ELECTRO 2.2UF 50WV		
L1 ,2			L39-0106-05	TRAP COIL 19K		
L3 ,4			L40-1021-05	SMALL FIXED INDUCTOR 1MH		
IC1			HA12088NT	TRANSISTOR DOLBY B/C NR		

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
247	1F	*	G01-1883-08	TORSION COIL SPRING		
248	2G	*	G01-1884-08	TORSION COIL SPRING		
249	1G	*	G01-1885-08	TORSION COIL SPRING		
250	1G	*	G01-1886-08	TORSION COIL SPRING		
251	1F	*	G01-1887-08	TORSION COIL SPRING		
252	2D	*	G01-1888-08	TORSION COIL SPRING(CASET HOLD		
253	2E	*	G01-1889-08	TORSION COIL SPRING(CASET HOLD		
254	1D,2D	*	G02-0194-08	LEAF SPRING		
255	1F	*	G02-0413-08	FLAT SPRING		
256	3D,3E		G11-1120-08	CUSHION (MOTOR)		
260	2D	*	J19-2679-08	BRACKET (BUTTON)		
261	1G	*	J19-2680-08	BRACKET (SELECT SW)		
262	3F	*	J19-2681-08	BRACKET (SSW)		
263	1G	*	J19-2682-08	BRACKET (REC SW)		
264	2F	*	J19-2683-08	HOLDER ASSY		
265	3D	*	J21-3877-08	MOUNTING HARDWARE		
266	1F	*	J31-0277-08	COLLAR		
267	3E	*	J31-0278-08	COLLAR (FLYWHEEL)		
268	1E	*	J90-0167-08	GUIDE		
269	1E	*	J90-0168-08	GUIDE (TAPE L)		
270	2E	*	J90-0169-08	GUIDE (TAPE R)		
271	1E	*	J90-0170-08	GUIDE (CASSETTE L)		
272	1F	*	J90-0171-08	GUIDE (CASSETTE R)		
-			J61-0307-05	WIRE BAND		
275	2E		N10-2020-46	HEXAGON NUT (Ø2)		
276	2F,3F		N19-0333-04	FLAT WASHER (Ø2.1X4)		
277	1E,3E	*	N19-0366-08	FLAT WASHER (Ø2.1X4)		
278	2E,3E		N19-0524-04	FLAT WASHER (Ø2.1X4)		
279	2D,2E		N19-0935-08	FLAT WASHER (Ø2.6)		
280	2E,3E		N19-0937-08	FLAT WASHER (Ø1.9X5)		
281	3D,3E	*	N19-1029-08	FLAT WASHER		
282	1F	*	N19-1030-08	FLAT WASHER (Ø2.6X7)		
283	1E,1G	*	N19-1031-08	FLAT WASHER (Ø1.6X3.5)		
284	2G	*	N19-1032-08	FLAT WASHER (Ø1.6X5)		
285	2E	*	N19-1033-08	FLAT WASHER (Ø2.1X5)		
286	2F	*	N19-1034-08	FLAT WASHER (Ø2.1X4)		
287	1E,2F		N29-0206-04	E RING (Ø2)		
AA	1F		N09-1673-08	SCREW (Ø2X3)		
BB	1F	*	N09-1674-08	SCREW (Ø2X10)		
CC	1F	*	N09-1675-08	SCREW (Ø2.6X5)		
D	2D,3D		N09-1496-08	SCREW (Ø2X4)		
DD	3D	*	N09-1676-08	SCREW (Ø2.6X13)		
E	1E,1F		N09-1497-08	SCREW (Ø2X5)		
EE	2E	*	N09-1677-08	SCREW		
F	2D		N09-1498-08	SCREW (Ø2X8)		
FF	3E	*	N09-1678-08	SCREW		
H	1F,1G		N09-1500-08	SCREW (Ø2.6X4)		
S4 ,5	1F,1G		S46-1061-08	LEAF SWITCH(METAL,CROP)		
S6 ,7	1E,1F	*	S46-1085-08	LEAF SWITCH(DIRECTION,REC)		
S8	3E	*	S46-1086-08	LEAF SWITCH(PLAY)		
291	3D	*	T42-0096-08	MOTOR ASSY		

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SPECIFICATIONS

Type ..... Stereo one way and auto reverse double cassette deck with Dolby NR system and direct program search system

Track System ..... 4-track, 2-channel Stereo/ Mono, Recording/Playback

Recording System ..... AC Bias System (Bias Frequency: 105 kHz)

Erasing System ..... AC System

Tape Speed ..... 4.76 cm/sec (1-7/8 ips)

Heads ..... (Deck A) Playback Head x 1 (Hard Permalloy Head) (Deck B) Record and Playback Head x 1 (Hard Permalloy Head) Erase Head x 1 (Double Gap Ferrite)

Motor ..... 2 motors: Electronically Controlled DC Motor

Fast Winding Time ..... Approx. 105 seconds with C-60 tape

Frequency Response:

Normal Tape ..... 20 Hz to 15,000 Hz (30 Hz to 14,000 Hz, ±3 dB)

CrO_2 Tape ..... 20 Hz to 16,000 Hz (30 Hz to 15,000 Hz, ±3 dB)

Metal Tape ..... 20 Hz to 16,000 Hz (30 Hz to 15,000 Hz, ±3 dB)

Signal-to-Noise Ratio:

Dolby C Type NR ON ..... 72dB (KX-65CW) (NORMAL Tape)

Dolby B Type NR ON ..... 65dB (KX-65CW) (NORMAL Tape) (NORMAL Tape)

Dolby NR OFF ..... 56 dB (NORMAL Tape)

Harmonic Distortion ..... Less than 0.7% (at 1 kHz, 0VU with Normal Tape)

Wow and Flutter ..... ±0.28% (DIN), 0.09% (W.R.M.S.)

Input Sensitivity/ Impedance:

LINE x 2 ..... 77.5 mV/50 kohms

Output Level/Load Impedance:

LINE x 2 ..... 270 mV/3.9 kohms

Headphones x 1 ..... 0.2 mW/8 ohms

Power Requirement ..... 120 V 60 Hz (USA and Canada) 220 V 50/60 Hz (European countries) 240 V 50/60 Hz (Australia, UK) 120 V/220-240 V 50/60 Hz (Others)

Power Consumption ..... 18 watts

Dimensions ..... W: 420 mm (16-9/16") H : 123 mm (4-13/16") D : 268 mm (10-9/16")

Weight (Net) ..... 4.5 kg (9.9 lb)

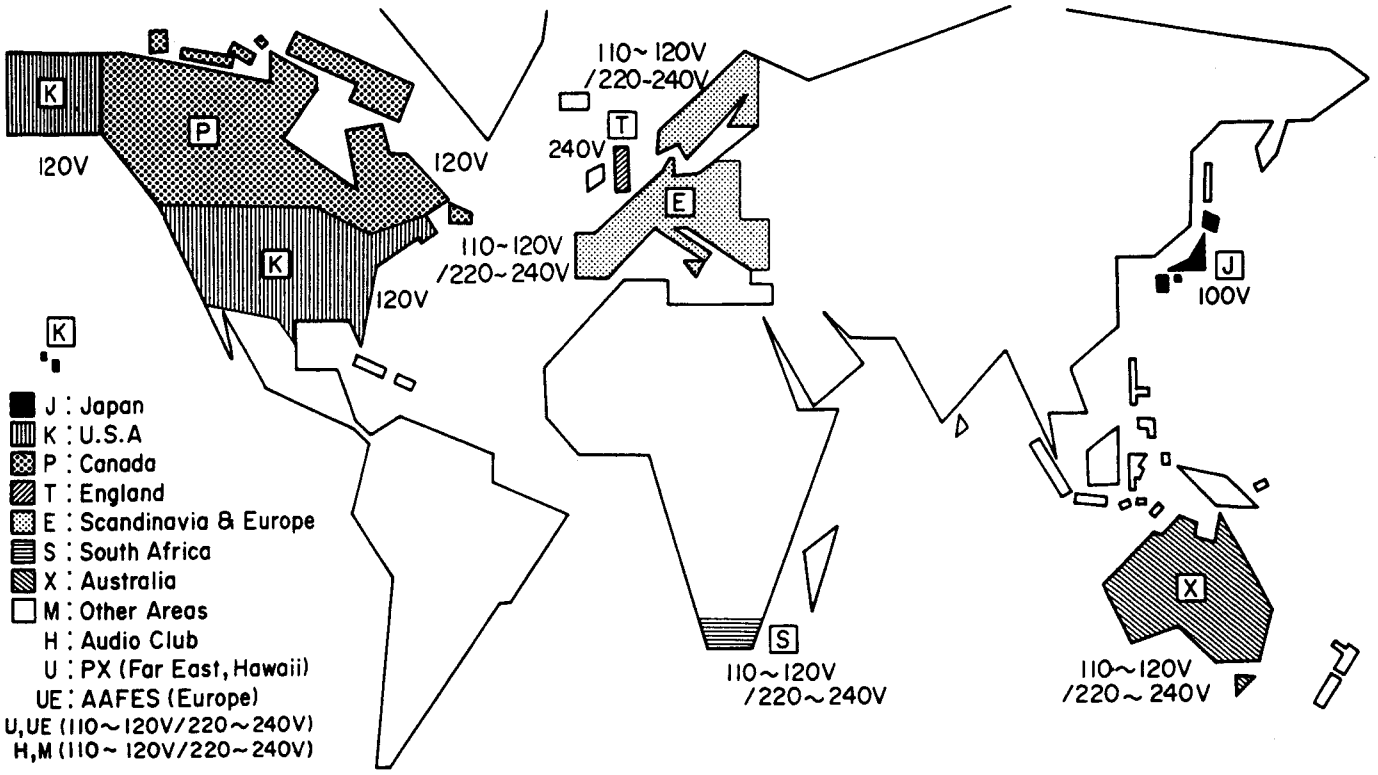
Reference Tapes ..... Normal: KENWOOD ND-60, TDK AD C-60 CrO_2: KENWOOD CD-60, TDK SA C-60 Metal: KENWOOD MD-60, TDK MA C-60

Note:

We follow a policy of continuous advancements in development.
For this reason specifications may be changed without notice.
Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

KX-65CW

WORLD MAP & AREA CORD



Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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